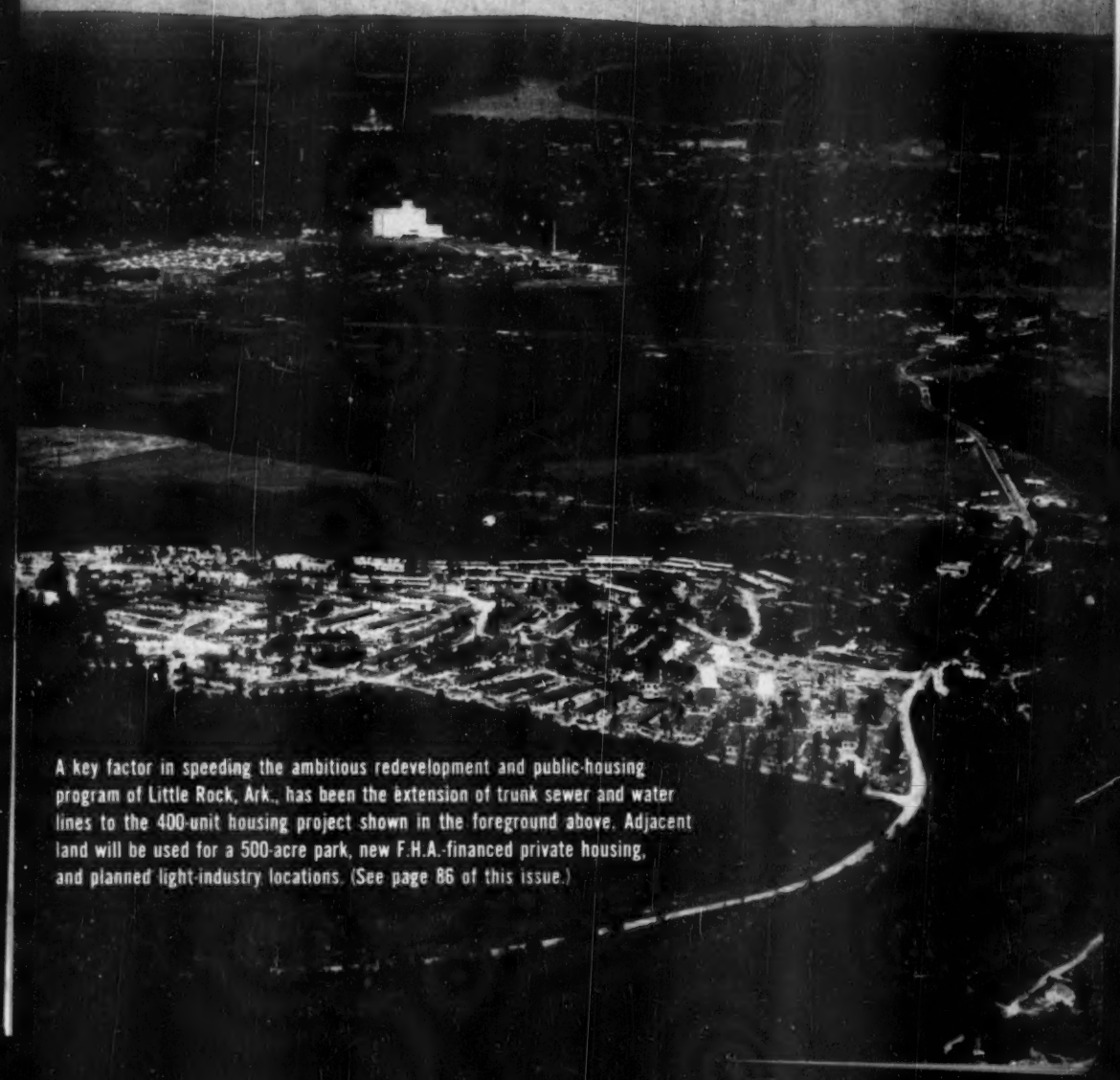
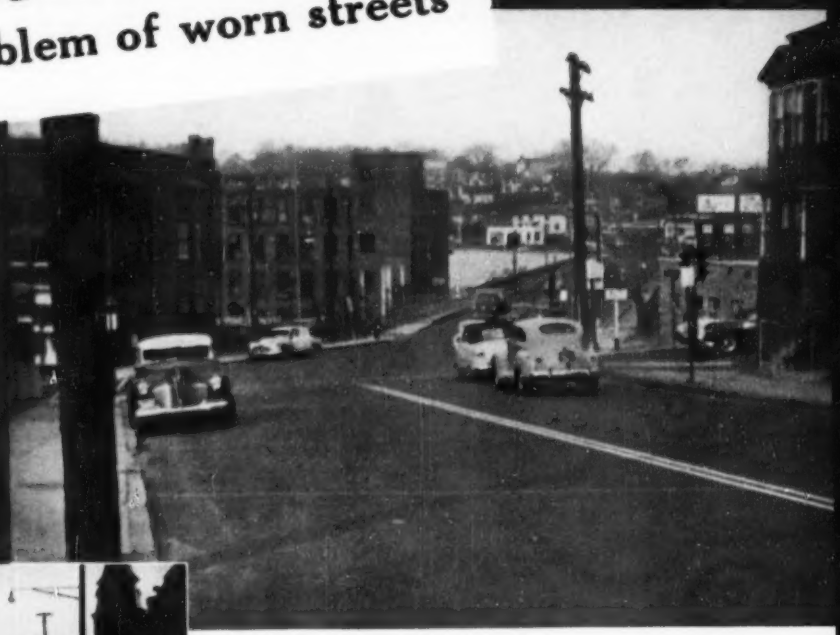
FEBRUARY 1952

The American City



A key factor in speeding the ambitious redevelopment and public-housing program of Little Rock, Ark., has been the extension of trunk sewer and water lines to the 400-unit housing project shown in the foreground above. Adjacent land will be used for a 500-acre park, new F.H.A.-financed private housing, and planned light-industry locations. (See page 86 of this issue.)

A New England city's answer to the problem of worn streets



Broadway

MacArthur Square

Chicopee, Mass., inaugurated a sizable program of improving worn streets last year. Photographs show new Texaco Asphaltic Concrete surface constructed on two of the city's streets by Asphalt Paving Corporation of Springfield, Mass.

Chicopee, Mass., a thriving industrial city of 49,000 population, is in the midst of a program calling for the improvement of many of its worn streets. Approximately 125,000 square yards of these streets were modernized last year.

A new two-course surface of hot-mix Texaco Asphaltic Concrete has been constructed over existing macadam and concrete pavements. Street car rails were removed prior to resurfacing. Chicopee specified a 1½-inch thickness for each of the asphalt courses, assuring itself a pavement capable of coping with its heaviest traffic for years with a minimum of upkeep.

Hot-mixed asphaltic concrete is the answer to the engineer's need for a heavy-duty pavement with a low annual cost. It has been chosen for the New Jersey Turnpike, the Holland Tunnel between New York City and New Jersey and the Delaware River Bridge at Philadelphia. A helpful description of this and other types of asphalt paving is found in the booklet, "Texaco Asphalt Paving—Plant-mixed Types." Write our nearest office for a free copy of this publication with no obligation.

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VOL. LXVII FEBRUARY
No. 2 1952

The American City

Issued Monthly by the American City Magazine Corporation 470 Fourth Ave., New York 16, N. Y. Tel. MU-5-9252

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Subscription $4 per annum to any part of the world. Single copies, 50 cents. Back copies, $1. **Entered as second-class matter, July 20, 1910, at the Post Office at New York, N. Y. under Act of March 3, 1879. Printed in the U. S. A.**

The American City **is indexed regularly by Engineering Index, Inc., and the Reader's Guide to Periodical Literature**

THE MUNICIPAL INDEX and ATLAS (over 800 pages), published annually by the American City Magazine Corporation, when used with the current advertisements to THE AMERICAN CITY, provides officials with the latest information on all types of municipal equipment and supplies.

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Time for Courtesy

It's nice to pick up the telephone and hear an alert, friendly voice come over the wires.

It may be the familiar "Voice with a Smile" of the telephone operator. Or a friend or business customer. Or a stranger you're meeting — and judging — for the first time by telephone.

Any time is a good time for telephone courtesy. But right now, when the rush is on and minutes are scarce, it is doubly appreciated.

All 'round the clock it saves time and tempers and helps everybody get more things done, more quickly.

BELL TELEPHONE SYSTEM

Our Municipal Notebook

Get the Scrap In

An urgent plea from the Defense Mobilization Director to The American City's readers:

WE simply cannot meet the military demands and maintain even a reasonable civilian production without vast quantities of steel, iron, copper, brass, bronze, aluminum, lead, zinc, and other essential metals. This production calls for enormous amounts of scrap in all these fields. Every municipality generates scrap. I urge every municipal official to *get that scrap in.* This is a *must* if we are going to do America's Number One job today—build our might in time.

CHARLES E. WILSON
Defense Mobilization Director
Room 102, Executive Office Building, Washington, D. C.

M.I.T. Fellowship In City Planning

THE Department of City and Regional Planning of the Massachusetts Institute of Technology has announced the F. W. Chandler Fellowship in City Planning, amounting to $1,200 for the academic year of 1952-53. The award will be made on an application for admission to the graduate course, whose background is such that he may expect to receive the M. C. P. degree within two years. Graduate School and fellowship application forms may both be obtained from the Director of Admissions and should be filed before March 1. For further information write to Professor Frederick J. Adams, Room 7-333, M.I.T., Cambridge, Mass.

Harvard Fellowships In Public Administration

THE Lucius N. Littauer fellowships, carrying stipends up to $2,100, are again available for men who have already had some experience in the public service and whose academic abilities and personal promise give evidence of the likelihood that they may profit from graduate training in the social sciences. Application blanks, catalogs, and other information about these fellowships, and also Administration fellowships available to a limited number of recent college graduates, may be obtained by writing to 118 Littauer Center, Harvard University, Cambridge 38, Mass. Applications should be filed by March 15, 1952.

Red Cross Fund Appeal Needs Your Help

NOT only to lessen the horrors of war, but for readiness to serve in local emergencies, Red Cross chapters need the backing and support of municipal officials.

Don't forget the Midwestern floods of last June—involving the fourth costliest domestic-relief operation in the history of the Red Cross. This disaster enlisted the services of more than 600 Red Cross workers in Kansas, Missouri, Oklahoma, and Illinois, is providing emergency relief for some 27,000 families requiring Red Cross help.

As a local civic leader, you can help to assure the success of next month's Red Cross fund appeal.

This poster for the $85,000,000 American Red Cross March 1952 campaign is a symbol of the drive's slogan, "Answer the Call."

Solving Local Community Problems by Self-Help

BEGINNING Sunday, January 6, from 10:05 to 10:30 p.m. EST., the National Committee for "The People Act" inaugurated its nation-wide educational project demonstrating how communities can solve local problems through self-help.

The National Committee, through its chairman, Dr. Milton S. Eisenhower, and its educational director, Ray H. Smith, is associating with itself university colleagues from all parts of the country who will help in counseling listeners inquiring about local applications of the programs.

The People Act will be the first radio series produced by the Television-Radio Workshop established by The Ford Foundation, and administered through the Fund for Adult Education. The project is designed to show Americans what self-reliance is achieving throughout the United States today, and to offer a minimum, but adequate measure of assistance to all who would like to apply the principles of democracy in the solution of their own local or regional problems.

The People Act series will present, in the actual voices of the people who have lived them, success stories of community cooperation to solve problems considered at the outset either unique or possibly unsolvable.

Elmore McKee, originator of the series, will supervise the program research for the Television-Radio Workshop, and Irving Gitlin will produce the broadcasts for CBS Radio, it was announced by Robert Saudek, director of the Television-Radio Workshop.

The American City Quiz

Match Wits with the Experts

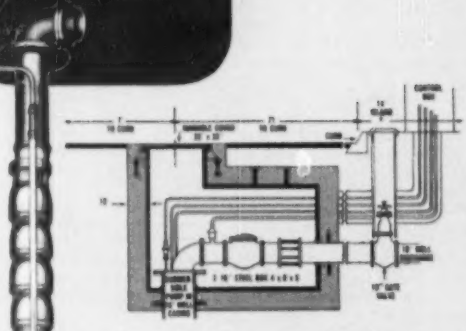
QUESTIONS

1. ***How much would one have to spend to make sea-water potable?***
2. ***Is activated carbon ever used to control algae tastes in the larger open reservoirs?***
3. ***Has the use of fluorides in the public water supply been sanctioned generally by dental authorities?***
4. ***What are the merits and disadvantages of powdered anthracite coal used in water filters instead of sand?***
5. ***How can one trim street trees so that they will not damage electric wires and still not destroy their beauty?***
6. ***How thick should a concrete slab be in a residential street?***
7. ***How soon should snow-plowing equipment go into action when a snow storm strikes a city?***
8. ***What temperature will be generated inside a sanitary fill?***
9. ***When building garden-type apartments, how much land area should be supplied per family?***
10. ***What is the best type of parking meter?***

(Answers on page 9)

New 17,150-Home Lakewood Park will be supplied by BJ submersibles!

another **BJ** submersible pump case history



UNDERGROUND VAULT is hermetically sealed and houses a hermetically sealed 4-stage, 60 hp BJ Submersible which pumps 1800 gpm against a 100 ft. head.

Lakewood Water and Power Co. uses BJ "invisible" pumping stations to service this great housing "city"

LAKEWOOD PARK, just north of Long Beach, California, is probably the world's most modern community. Its 3500 acres of new homes, schools, churches, parks and shopping center are planned to benefit from the newest in design, methods and materials.

Following this pattern, Lakewood Water and Power Co. uses Byron Jackson Submersibles to place all pumps underground and eliminate old-fashioned pump houses. No pump buildings will mar the residential areas or take valuable space from the 153-acre shopping center. Water for Lakewood and neighboring communities is supplied from wells using BJ "packaged" pumping stations submerged below the surface, with pressure tanks and piping wholly or partially underground. These BJ Submersible Pumps—proved in hundreds of municipal installations—greatly reduce real estate and construction costs, need no daily maintenance, and are the best answer to flood, fire, sabotage and other disaster conditions.

Lakewood's 70,000 residents will be unaware of silent submersible pumping stations such as this one beneath the street. Note control panel located in island at right.

Find out how BJ Submersibles can benefit your water supply program. Contact your local Byron Jackson office or write direct.

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OFFICES IN PRINCIPAL CITIES

Court Rules Michigan Cities Lack Power To Impose Income Taxes

IN AN opinion which will be appealed to the Michigan Supreme Court, Circuit Court Judge Harry Boardman of Jackson, held on December 28 that the City of Saginaw had no constitutional authority to impose a municipal 1% income tax.

Judge Boardman ruled it is doubtful whether the state has a constitutional right to levy an income tax and that no city can assume powers not held by the state.

His opinion further held that the Michigan home-rule act grants municipalities only the taxing powers also given the state, county, and school districts, and that these do not include income taxes.

Municipal League Of Maryland Urges Graded Tax Plan

AT the annual convention of the Maryland Municipal League, held in Annapolis, December 7 and 8, the following resolution was unanimously adopted:

> RESOLVED, that we urge the General Assembly of Maryland to enact permissive legislation giving discretion to the governing bodies of incorporated cities and towns and special taxing authorities to levy taxes on personal property and improvements to real estate at a lower rate than that on the unimproved value of land.

Officers and Council Members

Elected at the business session of the League, to serve for the ensuing year, were:

President:
Mayor Herman L. Mills, Hagerstown

President-Elect:
Herbert W. Reichelt, Mount Rainier

Council Chairman:
Mayor Thomas D'Alesandro, Jr., Baltimore

Vice-Presidents:
Mayor A. Hartley Stevens, Snow Hill, South Eastern Shore
Mayor L. Roy Willis, Easton, North Eastern Shore
Councilman Leon Abramson, Baltimore, City of Baltimore
Mayor Ross Beville, Takoma Park, Southern Maryland.
Mayor Donald B. Rice, Frederick, Central Maryland
Mayor Jesse F. Jacobs, Frostburg, Western Maryland

Council Members at Large:
Mayor Thomas S. Post, Cumberland
Councilman James Swing, Cambridge
Commissioner Thomas McLay, Port Deposit

Immediate Past President:
Mayor G. LaMar Kelly, Rockville.

Josph M. Ray (Box 276, College Park, Md.) continues as executive secretary.

Lease-Purchase Plan of Municipal Financing Gains Increasing Favor

THE Supreme Courts of Michigan and California, in recent decisions, have given added impetus to the lease-purchase method of financing non-revenue-producing facilities such as city halls, school buildings, and fire houses.

An article in the November issue of *Municipal Finance*, quarterly Journal of the Municipal Finance Officers Association, pointed out the following:

A private contractor puts up a building according to city specifications on land already owned by the city, but leased to the contractor for a token fee. In turn, the builder leases the building back to the city for an annual or monthly rental. At the end of the lease period, title to the building is conveyed to the city without further payments to the contractor, aggregate rental payments having covered the original cost of the building, together with interest.

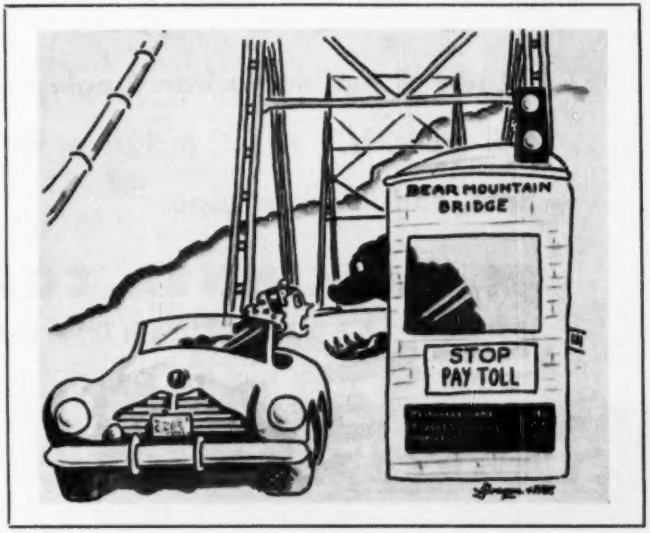
Typical Examples

Typical of the projects financed by California cities through lease-purchase arrangements are these: Culver City is having an off-street parking lot built. San Clemente has arranged for the development of beach frontage for recreation purposes as well as for construction of a parking lot adjacent to the beach. Santa Monica has financed a municipal incinerator this way.

In Michigan, a new Detroit-Wayne County administration building is under construction, financed through the lease-purchase plan. There, an authority was set up to finance the project by issuing bonds payable solely from rentals received from the city and county. Upon retirement of the 30-year bond issue, title to the facility is to be conveyed to the city and county without further payment.

Similarly, Whiteville, N. C., recently completed a new City Hall, which was built by a non-profit corporation specially created for this purpose. The city provided the lot and building materials such as steel, bricks, and plumbing fixtures, and the corporation was responsible for the actual construction. Building specifications were set by the city. The city agreed to lease the building at $371 a month for 10 years, after which time it will own the building outright. Currently, the city is receiving $470 a month for space in the building which it does not need and is sub-leasing to other agencies.

There is a considerable difference of opinion regarding the merits of the lease-purchase method of financing, the article notes. Proponents of the plan assert that present bond-financing regulations requiring popular approval are unrealistic in view of typical bond-election turn-outs, the technical questions involved in debt financing, and the delay resulting from bond financing. Opponents of the scheme claim that the public should be given an opportunity to vote on capital-improvement projects involving long-term fixed charges, and that if the people wish to delegate more authority over capital-improvement financing to the legislative bodies, constitutional limitations should be amended.



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Winston-Salem Blueprints Become Footprints

SUPPLEMENTING the article on page 112 of this issue, "Winston-Salem and Forsyth County Joint Planning Board Aids Orderly Development," by Russell Van Nest Black, is information subsequently furnished by Henry C. Moore, Director of Planning of the City-County Planning Board.

Mr. Moore reports that a Redevelopment Commission was established, after the enactment of necessary enabling legislation by the State Legislature. The city has been granted a reservation of over $800,000 by the Housing and Home Finance Agency, and the Commission has employed a very competent director, before filing an application for a preliminary planning advance.

Validity of Jurisdiction

Mr. Moore also writes that in a recent zoning case, some question was raised as to the validity of the city zoning jurisdiction within the three-mile limit. However, the County Commissioners have instructed the planning board to prepare for their adoption a zoning ordinance for this debated area, which will have provisions similar to those of the city zoning ordinance. The Commissioners have also asked the Planning Board to prepare an ordinance that can be extended out into the rural sections of the county.

Mr. Moore adds other information about planning progress in Winston Salem, as follows:

The Fairgrounds Commissioners have asked the Planning Board to work with them and their architects on a more detailed layout of the whole grounds. A model is being prepared now for the entire 50-acre site.

Housing Progress

In the matter of housing, the local Housing Authority has almost completed the first project, which involved close integration with the School Board in the location of a new school. A second project is under construction, and in the site design, right-of-way necessary for the Belt-Line, mentioned in Mr. Black's report, was set aside and eventually purchased by the city, along with the land necessary for a traffic interchange at that point. A third housing project is in the land-acquisition stage. This will be a slum-clearance project involving the razing of some hundred odd substandard dwellings. The location of this project was the direct result of a student-planning problem. Every year we have been cooperating with the Department of City and Regional Planning at the University of North Carolina, in an actual case study of an area in Winston-Salem. In this connection, the students investigated another substandard area of the city, which will be the basis for our application for a preliminary planning advance for the Redevelopment Commission.

The Mayor has recommended that the land mentioned in Mr. Black's report for a large Negro recreational area be set aside for that purpose. The County Commissioners have appointed one of their members to work with a Park Commission in preparing detailed plans for the development of this park.

69,249,148 Live in 157 Urbanized Areas

DETAILED population figures released by the Bureau of the Census for 157 central cities of over 50,000 population and their fringe areas will be found on pages 122, 123, and 124 of this issue of THE AMERICAN CITY.

The following tabulation presents a summary of numbers and percentages of the United States population of 150,697,361 in the several urban and total rural categories:

Areas	*Number*	*Per Cent of U. S.*
Urban, total	96,467,686	64.0
157 urbanized areas	69,249,148	46.0
In central cities	48,377,240	32.1
In urban fringes	20,871,908	13.9
Other urban places	27,218,538	18.0
Rural, total	54,229,675	36.0

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The American City Quiz

ANSWERS TO QUESTIONS ON PAGE 5

1. According to W. W. Aultman, Water Purification Engineer of the Metropolitan Water District of Southern California, the cost runs between 10 and 20 times that required when using water from fresh sources, if the sea-water is treated by the vapor-compression distillation method. Other types of treatment average 500 times the fresh-water cost.

2. It is used to good advantage in Orange, N. J., by Fred Luthy, Chief Engineer, who has an open reservoir holding 170,000,000 gallons of water. His practice is first to apply copper sulphate and then to pump a slurry of activated carbon into the water, using about 400 pounds of activated carbon. The slurry is applied from a rowboat. In the summer, applications are made at 10-day intervals. In the spring and late fall, it is applied every four weeks.

3. The American Dental Association has approved of fluoridating the public water supplies as a dental-health measure if prior approval is granted by the local dental society and the practice is in accord with standards set by responsible health authorities. The association warns, however, that it is not a cure-all.

4. According to L. C. Billings, Chief Engineer of the Dallas (Texas) Water Department, the anthracite-coal filter medium, commonly known as Anthrafilt, requires less water to backwash it and thereby cuts the filter-operating costs. He reports, however, that the coal grains have a somewhat greater tendency to coat with calcium carbonate and therefore can cause some trouble in water-softening plants. The Dallas plant has both sand and Anthrafilt filters.

5. Richard Walter, Superintendent of Parks and Shade Trees, Maplewood, N. J., recommends that when pruning a tree for this purpose, one should try to form the tree growth so that the tree eventually envelopes the wires without leaving it shapeless and weakened.

6. According to H. Walter Hughes, Associate Engineer, Rochester, N. Y., Department of Public Works, a 5¼-inch slab should be thick enough. It will carry safely a vehicle with a wheel load of 8,000 pounds on a subgrade capable of holding 10 pounds per square inch. On stronger subgrades, 5 inches is enough.

7. Willard S. Pratt, Director of Public Works, Newton, Mass., expects his plowing equipment to start when 2 inches of snow have fallen. He also expects the equipment to have covered all routes before 4 inches of snow have accumulated.

8. When the sanitary-landfill method is working correctly, you can expect a temperature beneath the earth cover that will reach 140 degrees for several days, according to J. C. Dawes, Ministry of Health, London, England.

9. In four eastern communities, at least 3,000 square feet of net lot area are required per family in garden apartments. This is 14½ families per acre. Prevailing height limitation is 2½ to 3 stories. Maximum lot coverage ranges from 20% to 35%, with 25% most frequent.

10. Fred Galloway, Town Engineer, Montclair, N. J., has been using parking meters for 15 years and doesn't yet know which is the best type. He has over 900 meters of various types. He reports less trouble with the one-hour meter than with any other. He will get one complaint per day per 144 meters.

Send in your suggested questions with the answers on municipal topics for use in this feature. The AMERICAN CITY will make a small payment for each question accepted.

TAKE A TIP FROM ELKO

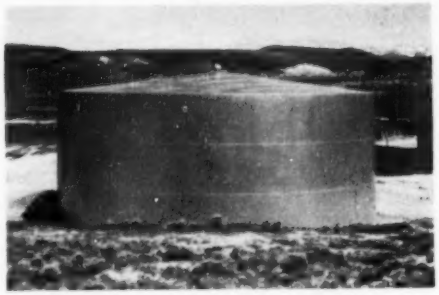
INSTALL HORTON RESERVOIRS FOR A DEPENDABLE WATER SUPPLY

Mile-high Elko, Nevada, has to dig *deep* for its water supply. Wells sunk hundreds of feet in the ground must provide for all normal requirements—plus emergency situations that may arise. Any interruption of this service might pose a serious problem unless adequate measures are taken.

That's why Elko recently installed two new Horton welded steel reservoirs. These structures boost the total municipal water storage capacity to 2,650,000 gallons—more than three and one-half times the amount formerly provided. Now more dependable water service is assured all day—every day.

Horton reservoirs will provide this important service for many years to come because they are of long-lasting welded steel construction. Periodic painting will keep them in top condition.

Horton reservoirs and standpipes are built in standard capacities up to 1,000,000 gallons. Horton elevated water tanks are built in capacities from 5,000 to 3,000,000 gallons. For more complete details or quotations, write our nearest office.



Above: 500,000-gal. Horton reservoir, 60 ft. diam. by 24 ft. high, built for the City of Elko, Nevada, by Chicago Bridge & Iron Company.

Below: 1,400,000-gal. Horton welded steel reservoir 100 ft. by 24 ft. at Elko, Nevada. Like all Chicago Bridge & Iron Company structures for municipal water storage, Horton reservoirs are built in accordance with A.W.W.A. specifications.

HORTON

WELDED STEEL

STORAGE TANKS

CHICAGO BRIDGE & IRON COMPANY

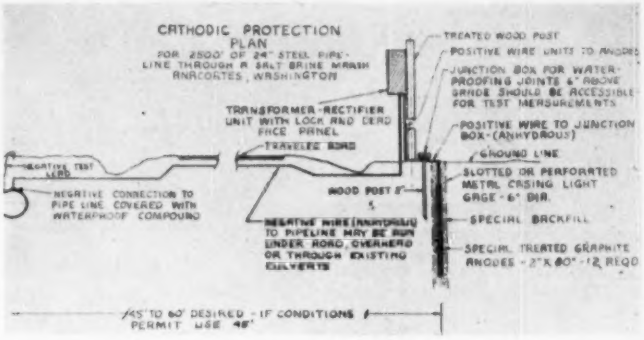
Plants in Birmingham, Chicago, Salt Lake City, and Greenville, Pa.

Atlanta 3	2114 Healey Bldg.	Los Angeles 17	1503 General Petroleum Bldg.
Birmingham 1	1502 North Fiftieth St.	New York 6	3308-165 Broadway Bldg.
Boston 10	1002-201 Devonshire St.	Philadelphia 3	1616-1700 Walnut Street Bldg.
Chicago 4	2127 McCormick Bldg.	San Francisco 4	1533—200 Bush St.
Cleveland 15	2236 Guildhall Bldg.	Seattle 1	1301 Henry Bldg.
Detroit 26	1501 Lafayette Bldg.	Tulsa 3	1625 Hunt Bldg.
Houston 2	2101 C. & I. Life Bldg.	Washington 6, D. C.	1163 Cafritz Bldg.

Water Supply and Treatment

Steel Water Line Corrosion-proof by Cathodic Protection

The drawing at right shows how the installation was made.



The cathodically protected pipeline lies along this highway.

A STEEL water-transmission main, 2,500 feet long and 24 inches in diameter, passing through a salt marsh in Anacortes, Wash., isn't expected to suffer any more corrosion damage, now that the city has installed a cathodic protection system engineered to correct this problem. In the past, as many as 30 or 40 leaks per year occurred. However, in the two-year period that the pipe has been protected by the new cathodic system, there have been only eight pinhole leaks.

Installation of System

The protection system was installed by the Cathodic Protection Division of the Harco Corporation, Cleveland, Ohio. Specially treated graphite ground anodes surrounded with backfill material are buried approximately 200 feet apart with junction boxes extending 6 inches above grade. One transformer-rectifier unit with lock and dead-face panel is located approximately at the center of the installation. From this, a positive wire runs to the buried anodes and a negative wire extends 40 feet under the road to the pipeline on the opposite side.

In operation, direct current from the transformer-rectifier unit is impressed upon the anodes and radiates through the soil, which acts as the electrolyte, to the metal pipe. The current enters the metal surfaces of the pipe and opposes the electrochemical action of corrosion.

If It's Essential Build Now

GO AHEAD with essential water projects, recommended G. E. Arnold, Director of the Water Resources Division of the National Production Authority, before the New York Section meeting of the American Water Works Association in New York City January 15.

Mr. Arnold urged that water-works men be prompt about getting in their applications, and be thorough in telling why the improvements are needed. "Ask for what you need and no more," he said. "If we give approval, we approve it all; you can't use 90% of a pipeline." He estimated that 30% of the applications were being denied.

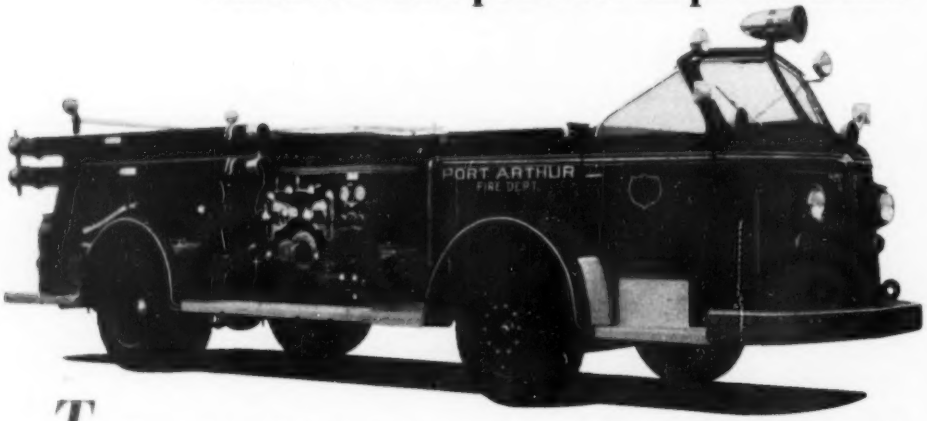
Shortages of steel and aluminum are easing, he stated. About 20,000,000 tons of steel will shortly be available as well as aluminum-plant capacity in the Northwest, where power is plentiful. The supply of copper, however, is not good, and water-works men must look for substitutes. He recommended using copper service pipe only under pavements.

Water-well drillers have seen their burdens lightened by a recent National Production Authority ruling. This allows them to estimate once each quarter the amount of steel they need for casing the wells they drill. There are roughly 9,000 well drillers and they require some 400,000 tons of steel annually.

Steel is now being allocated a little beyond the mills' production capacity. Unfilled allocations in any quarter will be given consideration before newer allocations in the next quarter.

Progressive Leadership . . .

Is achieved by AMERICAN-LAFRANCE through a continuing program of research and product improvement



TO PRODUCE the world's finest fire engines requires a thorough knowledge of the needs of the fire fighting service as well as skill in design and manufacturing. That's why American-LaFrance maintains an intensive research program, working constantly with members of the fire service.

When you buy a new fire engine, you want a unit that is really up-to-date in design and performance. The experience and know-how of fighting all types of fires gained by the fire fighting service is "built-in" American-LaFrance fire engines. Thus you can depend on American-LaFrance for the advanced design features, quality and dependability found only in the world's finest fire engines . . . American-LaFrance fire engines.

Fire service problems, experience and knowledge are resolved by American-LaFrance research to give you a continually better fire engine through improved performance, greater safety, better maneuverability, longer life and decreased maintenance.

See our representative for details and specifications

AMERICAN-LAFRANCE-FOAMITE CORPORATION
ELMIRA, NEW YORK, U. S. A.

LAFRANCE FIRE ENGINE AND FOAMITE LIMITED
TORONTO 9, ONTARIO, CANADA

Street Cleaning and Snow Removal

Yankee Snow Loaders In Britain

High-speed mechanical snow removal was introduced into the British Isles after an abnormally severe winter made adoption of the most efficient methods imperative for busy urban enters. Shown in the photo at the left is one of two Barber-Greene-Olding Model 522 snow loaders at work at Newcastle-upon-Tyne. This loader is manufactured in England by a subsidiary company of the Barber-Greene Company, of Aurora, Ill., and is similar to a model made in the United States. It has a capacity of 5 cubic yards per minute.

Compact Loader In Rhinelander, Wis.

Rhinelander, Wis., tries out a new small-size Barber-Greene snow loader and finds it able to deliver 11 cubic feet of snow per minute.

Norfolk, Va., Uses Women Street Sweepers

IF THE women can do as well with city house-cleaning as they do keeping their own homes clean, the experiment should work, thought C. A. Harrell, then City Manager of Norfolk, Va., when the present "lukewarm" war began nipping his manpower supply short.

So for a starter, he hired eight women for street-sweeping assignments. The women work in two groups of four, side by side with the regular groups of men. They work ahead of the trucks, piling up dirt for the men to put in the trucks. They work a 44-hour week, from 6 a.m. to 2 p.m.

During the manpower shortage period of the last war, women performed almost every task in municipal government. Some collected refuse, some operated water filter plants, many served in police posts. Baltimore City was one of the first to use women street sweepers in that period and found them very efficient.

CHRYSLER SIREN: *Remote Controlled, with the Loudest Sound for Civilian and Plant Defense!*

An important contribution to Civilian Defense, the NEW Chrysler Air Raid Siren produces the loudest warning sound ever achieved for modern production.

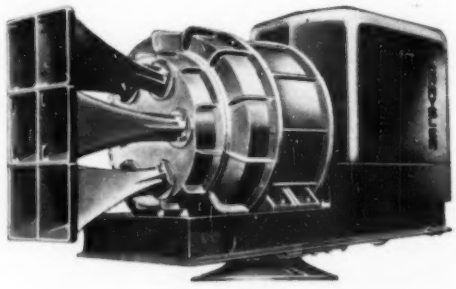
Recent development of a new 180 horsepower Chrysler Industrial V-8 Engine enabled Chrysler engineers to produce power for a 3 stage compressor. Increased pressure from this compressor drives air through 6 giant horns at 400 miles per hour, producing a sound of approximately 173 decibels! This warning can be clearly recognized over a diameter of 8 miles under normal conditions.

It is designed to fill the pressing need for a *positive* signalling device for City and Industrial air raid warning. Because it has *self-contained power* it is independent of vulnerable central power systems.

One, or any number Sirens may be remote controlled from a central control station if desired. They may be operated without personnel being on or near them. When in operation, the Siren makes one complete revolution every minute.

These Sirens are available only for Defense Warning Systems. They may be purchased by Cities and Towns, Defense Plants, Airports, Military Installations and other vital areas needing air raid protection.

For complete information, specifications and availability write: ***Marine and Industrial Engine Division, Chrysler Corporation, 12202 East Jefferson Ave., Detroit 31, Michigan.***



CHRYSLER

HORSEPOWER WITH A PURPOSE

Two Hours' Settling Is Best For BOD Removal

THE TERM "too much," the only practical definition of a poison, has an increasingly clear place in the sanitary engineer's handbook when he designs sewage-settling basins. And that place indicates a detention time smaller than many realize. Research at the University of Florida seems to indicate that the "too much" factor begins when the designer uses a retention time of more than 2 hours.

The Florida University studies showed that periods of less than 2 hours apparently gave better removals of BOD than did those of 2 hours and more. Retention times greater than 150 minutes did not appear desirable even under conditions of minimum flow. In Florida conditions, a primary settling tank probably will remove between 25% and 30% of the BOD rather than 30% to 45% ordinarily assumed.

As far as suspended solids are concerned, a retention time of 120 to 140 minutes seems to be the most economical, with 3 hours the maximum. Removals in the neighborhood of 45% to 50% are average.

These findings were presented in a paper prepared by Professors W. T. Calaway and Thomas Furman, of the University of Florida, at the recent Water, Sewage, and Industrial Wastes Conference held at Daytona Beach.

The authors pointed out that Florida sunshine probably plays an important role in setting these limits. The higher temperature decreases viscosity of the water, allowing more rapid settling. It also hastens biological action, causing some of the BOD present in the settleable solids to change to soluble BOD, and thus appear in the effluent if the retention time is too long. The solids also may become buoyed by the gas and pass through the tank, causing a reduction in the percentage removed.

118 Projects Needed In Colorado River Basin

CITIES and industries that contribute wastes which eventually flow into the Colorado River will have to spend $11,000,000 before they will have treatment facilities that will satisfy the various state boards of health and the United States Public Health Service. A report issued recently by the Federal Security Agency of the Public Health Service disclosed that sewage-treatment projects are needed at 118 municipal locations in Arizona, Colorado, Utah, Wyoming, California, and New Mexico. The study was prepared under the authority of the Water Pollution Control Act of 1948.

Evaluation and Needs

The basin area covers 244,000 square miles and embraces a population of 1,200,000. Over 300 industrial plants discharge wastes to the watercourses of the basin; however, the report was unable to evaluate fully this industrial-waste problem.

The 118 municipal sewage-treatment projects required include 34 new plants, additions or enlargements to 30, and replacement of 54 plants. Seventy-five municipalities have sewerage facilities that meet the requirements of these health authorities.

The report is listed as Water Pollution Series No. 9.

At Least a Billion Dollars Needed

AND it all ought to be spent in the area designated as the North Atlantic Drainage Basin, according to the United States Public Health Service. Further, it ought to be spent by some 724 municipalities and 880 industrial groups if water pollution is to be brought under proper control.

The report, prepared under the authority of the Water Pollution Control Act of 1948, embraces all or portions of the States of Delaware, Maryland, Massachusetts, New Jersey, New York, Pennsylvania, Vermont, Virginia, West Virginia, and the District of Columbia. Reports on other areas are approaching completion. The study shows that new treatment plants are needed to serve 439 municipal sources of pollution and 683 industrial sources. Enlargements of 224 municipal plants and 184 industrial plants are required, and plants serving 61 municipalities and 13 industries should be replaced.

Acid wastes from mines, the report emphasizes, present a perplexing problem and require specialized study to uncover ways of correcting them. It also expressed concern over the silt problem causing difficulty in certain streams and certain water supplies.

The report is identified as Water Pollution Series No. 10.

Phoenix, Ariz., Takes Sewage Treatment Seriously

Built in 1931, this Phoenix, Ariz., plant provides activated-sludge treatment. A recent expansion program, plans for which were made by the Phoenix engineering firm of Headman, Ferguson and Carrolo, and which included the addition of two 140-ft. Dorreo Square clarifiers and two Dorr sludge thickeners, each with 35-ft. diameters, has tripled the capacity of the plant. The effluent from the plant is used downstream for irrigation. Dario Travaini is plant superintendent.

Manila AGAIN PREFERS GAMEWELL

Manila, the capital city of the Philippines, first installed a Gamewell fire alarm system in 1903.

This system, from time to time extended with Gamewell equipment, was completely destroyed during the recent war.

After more than 40 years experience, Manila again purchased a complete fire alarm system consisting of a 38 circuit central station, 14 fire station alarm and recording equipments, and 600 fire alarm boxes. The new system has recently been placed in operation.

TRADE MARK
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THE GAMEWELL COMPANY

NEWTON UPPER FALLS 64, MASSACHUSETTS

In Canada: Northern Electric Co., Ltd., Belleville, Ontario

Public Safety

Wayne County Radio Aids Fire Fighting, Rescue, and CD

George Helfer, volunteer fire chief of Sodus Point, N. Y., uses a walkie-talkie radio for "ship to shore" communication during a water-rescue operation on Lake Ontario. The volunteer department has also installed a G-E two-way radio in its fire truck as part of a county-wide radio network set up by Wayne County's volunteer fire departments. The headquarters at Lyons coordinates activities.

VOLUNTEER fire departments in Wayne County, N. Y., are installing two-way radios in their vehicles and forming a county-wide network to coordinate activities of all departments.

The county has installed a complete headquarters FM-radio-communications station in Lyons, the county seat. It is directed by Chief Stephans. The transmitting antenna for this station is located atop a near-by hill, the highest point in the county. Because Lyons is centrally located in the 680-square-mile, relatively flat county, Fire Chief John Stephans can easily contact any of the county's 27 departments.

Seven of the county's fire departments now have two-way radios in 10 vehicles, and 16 plan to install sets during 1952. Each department is independently purchasing the equipment from the General Electric Company. Two departments have walkie-talkie sets, and others plan to add them. The walkie-talkie radios are used to keep men on pumping engines in constant touch with those at the scene of a fire. Pumpers are sometimes as much as a mile from a fire, and calls for more or less water pressure are speeded by radio. They are also valuable for coordinating water rescues conducted by departments located on Lake Ontario, as the picture suggests.

The Wayne County Fire Chiefs Association, which originated the plan in the county, states that all 67 fire-fighting vehicles, 27 chiefs' cars, and other emergency equipment owned by the county's departments will ultimately be radio-equipped.

To Prevent Rust In Water-Tank Trucks

A LONG-TIME search for a satisfactory and economical rust preventive for use in fire equipment water tanks would appear to have ended after tests conducted at the United States Forest Service, at Roscommon, Mich. The material tested was Banox, a product of Calgon, Inc., Hagan Bldg., Pittsburgh 30, Pa.

Four small tanks made of 14-gauge, 4-way floor plate (mild steel) were used in the test. One portion of each tank was coated with Neutrol or Inertrol. Another portion was coated with aluminum paint, and a control portion was left untreated. Submerged in each tank was an equal amount of scrap steel, iron, brass, aluminum, galvanized iron, bronze, natural rubber, and Neoprene rubber.

Tank No. 1 contained plain tap water untreated (control tank); tank No. 2 contained tap water with 2% Drench and Banox; tank No. 3 contained tap water and 2% Drench, and tank No. 4 contained tap water and "Banox" (in recommended quantity).

Results of tests after 45 days were as follows: Inertrol coating—no damage in any tank; aluminum-paint coating—no damage in tanks No. 2 and No. 4; tank No. 1 rusted through, tank No. 3 showed large spots of rust. Untreated iron tank—no rust or damage in tanks No. 2 and No. 4; tanks No. 1 and No. 3 badly rusted. Heavy rusting and metal corrosion occurred in tanks No. 1 and No. 3, which had no Banox added to the water. Rusting occurred in tank No. 3 within the first 24 hours and in tank No. 1 within 48 hours.

Banox can be used for other purposes, such as fire fighting. Metal barrels can be filled with heavy salt-water concentrations mixed with Banox. It is non-toxic and contains no acids, alkalies, or chromate. Two pounds is enough to treat 200 gallons of water.

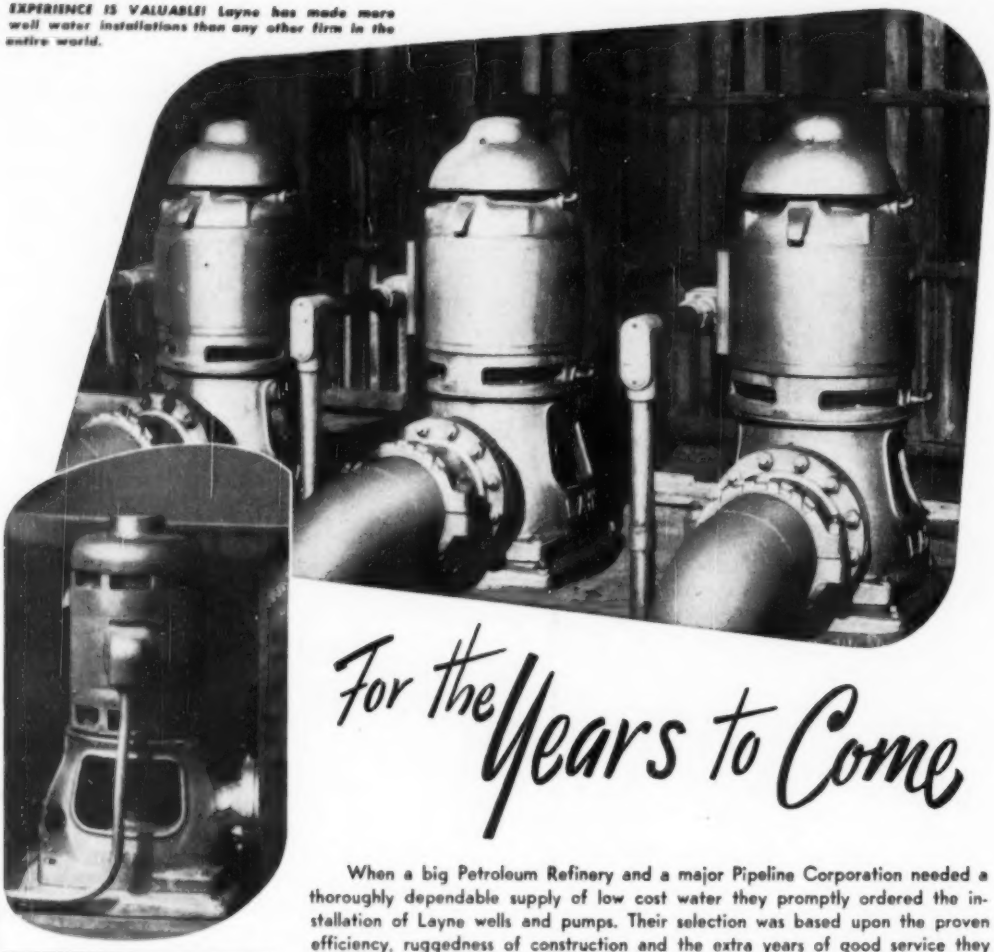
EINAR E. AAMODT, *Engineer*
U. S. Forest Service
Roscommon, Mich.

Fort Wayne Program Wins Fire Prevention Contest

THE 1951 Fire Prevention Week Contest brought 1,076 entries from cities and towns in the United States, Alaska, and Hawaii, 614 from municipalities in Canada, 54 from United States and Canadian industry, 247 from the U. S. Navy, 105 from the U. S. Army, 66 from the U. S. Air Force, one from the U. S. Veterans Administration, and one from the U. S. Atomic Energy Commission.

Fort Wayne, Ind., won the Grand Award in the United States for the best program, according to Percy Bugbee, Chairman of the Committee and General Manager of the National Fire Protection Association. Louisville, Ky., Atlantic, Iowa, Los Alamos, N. M., and Fort Collins, Colo., were judged next in that order of all American communities entering. In Canada the Grand Award winner was Ottawa, Ont., with Hull, Que., Kentville, N. S., Kitchener, Ont., and Edmonton, Alta., runners-up.

EXPERIENCE IS VALUABLE! Layne has made more well water installations than any other firm in the entire world.



For the Years to Come

When a big Petroleum Refinery and a major Pipeline Corporation needed a thoroughly dependable supply of low cost water they promptly ordered the installation of Layne wells and pumps. Their selection was based upon the proven efficiency, ruggedness of construction and the extra years of good service they could expect from Layne well water supply units. Very wisely they invested for the future.

Thousands of Layne well and pump installations ranging from one to twenty-five or more units, are giving outstanding service for cities, factories, railroads, dairies, chemical plants, packing houses, hotels, pipelines, refineries, air fields, army camps and naval stations. All were designed, built and installed complete by Layne's own engineers and field crews.

Layne enjoys the distinction of being the world's most experienced well water developers. No other organization has so much to offer those who are in need of well water supply units. Whether the requirements are for thousands or millions of gallons of water daily, Layne is ready to serve you. For further information address

LAYNE & BOWLER, INC.
General Offices, Memphis 8, Tenn.

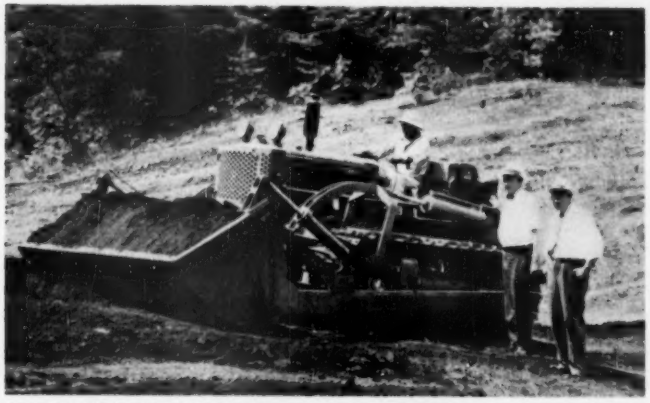
Catalogs

Layne's newest water supply catalog is of utmost interest to all who are contemplating the installation of a water well and pump. It illustrates and describes the many fine features of Layne built wells and Layne Vertical Turbine Pumps. A copy will be sent on request.

Layne
WATER SUPPLY
WELLS & PUMPS

More Items of Municipal Interest

Private Collectors Use County Landfill



Dr. A. G. Hufstedler, Health Officer for Knox County, Tenn., confers with P. R. York, who is County Sanitation Consultant, at the site of the new landfill.

LAST summer Knox County, Tenn., embracing the Knoxville suburban area, was experiencing the usual troubles encountered with the "operation" of an open dump. In August the Bureau of Health, under Dr. A. G. Hufstedler, established a centralized system of garbage disposal. Four private companies collect refuse in the county for a fee, and dispose of it in a single sanitary fill under direction of the Bureau of Health.

A Drott Bullclam shovel compacts refuse, the first stage of the new sanitary system of garbage disposal. The investment in the TD-14A International tractor and Drott Bullclam will be repaid to the county by a 25-cent levy per month on the disposal companies for each customer they serve. The firms pay 10 cents and charge the customer 15 cents.

After the Bullclam has crushed the refuse to a small fraction of its original volume, it spreads an earth cover over the garbage to a maximum depth of 2 feet. This, in turn, is compacted by the tractor and the site is ready for disposal of another day's accumulation of refuse.

This one site, on a farm west of Knoxville, is expected to provide space for seven years' accumulation of the county's garbage. The area, which originally comprised a hill and deep ravine, will, upon completion of the sanitary fill, be leveled and again become workable and productive farm land.

New Radio in St. Paul

ST. PAUL'S Police and Fire Departments have a modern emergency radio system, with selective calling, at fire stations and on 37 mobile fire units. Police Chief Charles J. Tierney sees it as an important civil-defense factor. It was designed and manufactured by Link Radio Corporation, 125 West 17th Street, New York City.

St. Paul fire-alarm headquarters transmits alarms by selective radio calling.

Workers Need Homes And Community Services in Defense Areas

IN HIS fourth quarterly report to the President, dated January 1, 1952, Charles E. Wilson, Director of Defense Mobilization, gives emphasis to the fact that:

> In many localities, we have startling evidence of how the lack of good housing, schools, and other community facilities may directly interfere with the defense effort.

"We are moving to solve these problems," says the Defense Mobilization Director, but he points out that:

> Only $25 million now is available for publicly constructed defense housing and a little over $15 million for community facilities and services necessary for defense workers and military personnel in designated areas. These funds are sufficient only to begin to relieve the most pressing situations, and they will soon be fully allocated.

Adams

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- Exceptional Blade Clearance in All Operating Positions
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- Easy Access for Fast Servicing
- World-Wide Dealer Service

The City of Salem, Mass., reports splendid performance for its 100 hp. Adams Motor Grader No. 610 on all types of street construction and maintenance work—including snow plowing in winter.

Adams Motor Graders are saving time and money for cities and towns the country over . . . building and maintaining streets and alleys—backfilling over sewers, water and gas mains—leveling playgrounds, parking areas, etc. . . . Available in several popular sizes, all Adams Graders offer the outstanding advantages listed on this page. Ask your local Adams dealer for complete information on the model best suited to your needs.

J. D. Adams Manufacturing Co. • Indianapolis, Ind.

Make your next motor grader an **Adams**

From Streets to Ball Diamonds

When the City of Salem, Mass., found itself in need of a new playground, the Department of Public Works was called on to build it. The photograph at the left shows the city's Adams No. 610, 100-hp motor grader spreading topsoil on the ball diamond portion of the play area.

Precast Manholes

These precast sections make the construction of manholes quick and easy.

ROCHESTER (N. Y.) Gas and Electric Corporation uses reinforced concrete pipe for manholes and finds that they take less time to install and save at least 30% in cost over masonry construction.

The pipe used is a standard cattle-pass section which comes in 4-foot lengths and has an 80-inch inside diameter. It has a flat floor with rounded curb to vertical walls that extend to half the height; the top half is circular.

Three lengths of this pipe make a manhole 12 feet long and 6 feet 8 inches high and wide. Ends are closed with masonry (with provision for duct entry), and an opening is cast in the top of one length of the pipe for manhole form and cover.

A crane can place three sections on the graded bottom of a hole in two hours; then it remains only to place the frame and cover and lay up the ends. If drainage is necessary, excavation can be sloped toward one end so the pipe floor won't have to be cut.

Universal Concrete Pipe Company, 297 S. High St., Columbus, is the flat-base pipe supplier.

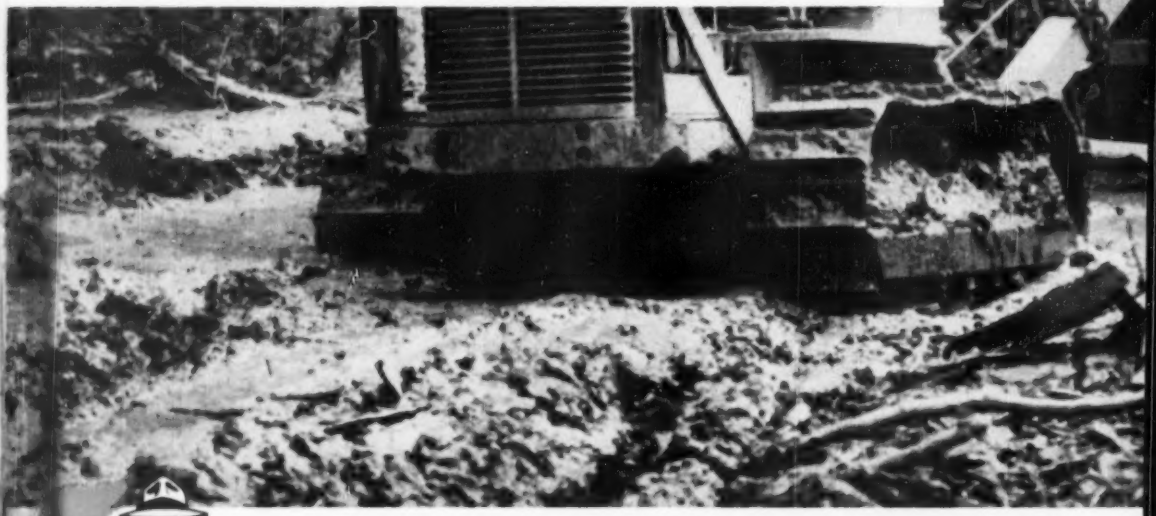
Twenty-five years ago this street would have been full of men and mattocks. But today all that El Paso, Texas, needs is one skilled operator and this big Adams No. 610 grader. The operator first scarifies, then grades the street, windrowing the excess materials so that it can be loaded into trucks by a front-end loader and hauled away. This photo shows him at work on a 4-block paving project.

One Man and a Machine in El Paso

only Allis-Chalmers can offer you

1000 Hour Lubrication

for truck wheels, idlers, support rollers



FULL PROTECTION—only One Greasing Every 1000 Hours—with Allis-Chalmers *Exclusive* Positive Seal, Roller Bearing Design

Think of it! You can operate for 6 months on a 40-hour-week basis with just one lubrication of 14 to 20 of the most-abused, hardest-to-service points on a tractor. It's possible through an exclusive combination of glass-smooth Positive Seals and anti-friction bearings that help you do more work at lower cost even under toughest conditions! And it's another ahead-of-the-field design feature found only in the four new Allis-Chalmers tractors.

These Big Benefits Mean DOLLARS to you!

DAILY GREASING PERIODS ELIMINATED. You save at least 30 minutes every day . . . gain about one full month's production every year.

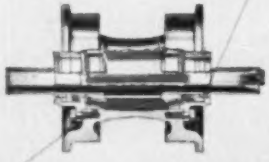
FULL PROTECTION ASSURED. Positive Seals keep grease in . . . dirt and moisture out. 1000-Hour Lubrication gives you protection unchallenged in the tractor field.

SAVES ON GREASE. Truck wheels, idlers and support rollers are grease-filled at the factory . . . need new grease only once every 1000 hours!

EASY TO SERVICE. No more cleaning of dirt, muck and grime from fittings every day. Operator can choose time and place to regrease when conditions are favorable.

Here's the secret:

Positive Seals ground smooth as glass, seal the grease in...keep dirt, grit, dust, mud and water *out*.



Tapered Roller Bearings protect the Positive Seals by letting truck wheels, idlers and support rollers rotate freely . . . without side thrust or wobble.

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TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

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HD-20 • HD-15 • HD-9 • HD-5

DESIGNED FOR YOUR JOB • BUILT TO TAKE IT • EASY TO OPERATE • EASY TO SERVICE

Get What You Want—No Charge!

Please check the list of interesting free catalogs on this and following pages. To obtain the literature you want, write directly to the manufacturers at the addresses given. If you prefer, you may circle the identifying numbers on this coupon and mail to THE AMERICAN CITY, *470 Fourth Ave., New York 16, N. Y., and we will see that catalogs are sent to you without expense or obligation.* 2/52

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Name ..... **Position** .....

Address .....

Data on Development Of the Modern Gas Engine

400 *The Modern Gas Engine*, a paper presented at the Oil and Gas Power Conference of the ASME, is now available in bound form. Written by Ralph L. Boyer and W. R. Crooks of The Cooper-Bessemer Corp., Mount Vernon, Ohio, the paper provides data, photographs, and charts on the development of the large internal combustion engines used for pipeline transmission service and electric power generation. Write for your copy of the report.

Reflective Street Marking

401 Centerlite reflective compound is easy to apply with standard marking equipment. The beads and binder are ready-mixed, going on uniformly in a brilliant stripe that gives long-wearing service. Further information may be obtained by writing to the Minnesota Mining and Manufacturing Co., St. Paul 6, Minn.

Replaces Loader And Three Trucks

402 According to R. G. LeTourneau, Inc., Peoria, Ill., its 28-mph D Tournapull replaces a loader and three trucks and is versatile for all construction and maintenance jobs. This all-weather performer also saves on job-to-job travel and is fast and easy to operate. It has 18.00 by 25 tires and a speed to 28 mph. Write for details on the 122-hp D Roadster and six interchangeable attachments.

Modern City Codes

403 The Michie City Publications Co., Charlottesville, Va., reports that, without obligation, one of its editors will visit your city, check your ordinances, and then submit a concrete proposal for doing your new city code. The firm is prepared to codify, edit, and index ordinances, bring them up to date, and publish a modern city code for your community.

Bitumuls-Sand Stock-piling

404 According to the American Bitumuls and Asphalt Co., 200 Bush St., San Francisco 4, Calif., Bitumuls-sand stock-piling makes street-repair time more productive. Bitumuls HCM makes an economical cold mix which is stock-piled during slack winter months for use during warmer summer weather. Workability is retained almost indefinitely without sacrifice of toughness, cohesion, or stability. The Bitumuls sand-mix is suitable for surface, leveling courses, or thick bases, even where subgrade deflection may be anticipated.

Water Gate Valves

405 Equal distribution of pressure against all points at the edges of each disc are assured when water works use the Mueller gate valve, according to the Mueller Co., Decatur, Ill. The valves may be operated vertically, horizontally, at an angle, or upside down with equal efficiency. Also produced by the company are meter yokes, angle valves, and meter-box covers, for piping or installation conditions when setting water meters; tapping and drilling machines, and water-works brass goods which include corporation and curb stops. For illustrated printed matter, write to the company.

Digestion Control For Sewage Plants

406 P.F.T. Floating Cover digesters for sewage plants provide effective digestion control, reports the Pacific Flush Tank Co., 4241 Ravenswood Ave., Chicago 13, Ill. The company states that its equipment provides complete submergence of buoyant sewage solids, more effective and safe collection of sewage sludge, and more complete digestion. Write for complete data.

Well-Water Installation

407 Installation of well-water-supply units of any size and for any purpose is offered by Layne & Bowler, Inc., Memphis 8, Tenn. Equipment used includes Layne drills, louver-type sand screen, and vertical turbine pumps. After installations are made, a record is kept of strata formation, sand porosity, casing details, sand screen length, diameter and metal used, and all pump information, including bearings, shafting, impellers, and operating characteristics. Write for copies of the Layne catalog.

Couplings to Repair Damaged Pipeline

408 For emergency repairs to pipelines, municipal officials may find the answer in Dresser couplings and repair products, manufactured by Dresser Mfg. Div., 59 Fisher Ave., Bradford, Pa. Resilient rubber gaskets provide lasting protection against vibration and shock. The six products which repair damaged lines quickly include: the adjustable sleeve Style 82; split sleeve Style 57C; coupling Style 38; bell-pack sleeve Style 126; super-service fittings Style 90, and bell-joint clamp Style 80.

The manufacturer states that even unskilled civil-defense volunteers can install them with a minimum of training.

Detailed information will be sent by the manufacturer, on request.

Maintenance Paints For Heavy-Duty Use

409 Manufactured for heavy-duty maintenance service are Tropical paints which resist acid fumes, alkalis, rust or heat, on metal, masonry, wood, or concrete, on floors, walls, ceilings, roofs, machines, or equipment. Available are paints for street-marking use, and special coatings for filtration-bed wash troughs. For a free copy of the *Industrial Paint Index*, write to the Tropical Paint and Oil Co., 1112-1300 W. 70th St., Cleveland 2, Ohio.

Accurate Voting Machines

410 Immediate and mechanically accurate election returns are afforded by the use of its equipment, reports the Automatic Voting Machine Corp., Jamestown 55, N. Y. Other features, the manufacturer states, are that the use of the machine means easier and quicker voting, no spoiled ballots, absolute secrecy, and no expensive recounts.

Snow Fence Prevents Drifts All Winter

411 The Big Red snow fence prevents drifts all winter, reports the Illinois Wire and Mfg. Co., Joliet, Ill. There is no opportunity for the pickets to loosen and fall out because they are tightly woven between the wires. The equipment is treated with Red Mineral Preservative which effectively prevents decay by killing fungus and sealing pores. Write for illustrated leaflet.

Municipal Castings

412 *Catalog R, Second Edition*, has just been released by the Neenah Foundry Co., Neenah, Wis. The company produces construction castings for highway, municipal, building, communication, public works, airport, utilities, and transportations. They have patterns for 15,000 different gray iron castings used on construction projects.

Street Sweeper Is Easy to Maneuver

413 The Mobil-Sweeper is easy to maneuver, reports The Conveyor Co., 3260 E. Slauson Ave., Los Angeles 58, Calif. Its four-wheel hydraulic brakes assure safe stops, even when sweeper is fully loaded. Built on a modified International Harvester truck chassis, the machine has a heavy steel cab with shatterproof windshields to protect the driver. Write for catalog.

(Please turn to page 25 for more Bulletins)

Now MI-CO Meters Offer

2

of the Finest Parking Meters Manufactured

(1) *The well-known, and highly regarded manually operated MI-CO.*

(2) *The equally famous, automatically operated MI-CO TWIN (formerly the Alfco Twin).*

December 27, 1951 MI-CO Meters purchased from American-LaFrance-Foamite Corporation its Alfco Twin, unquestionably the finest, most up-to-date of all automatic parking meters. More than one hundred cities have installed the Alfco Twin (now the MI-CO TWIN), and this type of meter is becoming increasingly popular wherever automatically operated parking meters are a requisite.

You make no mistake when you choose either the MI-CO manually operated parking meter, or the automatic MI-CO TWIN. Both meet definite requirements; both have distinct advantages.

Write for complete details and records of maintenance costs and earnings.

MI-CO METERS

231 Court Street, Covington, Kentucky

Division of The Michaels Art Bronze Co., Inc.

Which Catalogs Interest You?

Write directly to the manufacturers or use the coupon on page 23

Mobile Mixing Unit For Street Maintenance

414 One gets speedy, low-cost, street patching when he uses the Moto-Patcher, a mobile mixing unit, designed for easier and more economical street maintenance. Produced by Hetherington & Berner, Inc., 701-745 Kentucky Ave., Indianapolis 7, Ind., the machine delivers up to 10 tons of freshly mixed material per hour. The 400-gallon bitumen tank assures an adequate supply of bitumen for uninterrupted production.

Water-Works Brass Goods

415 On request, an illustrated brochure with detailed specifications on its water-works brass will be furnished by the A. Y. McDonald Mfg. Co., Dubuque, Iowa. The company states that its equipment is precision made in every step from foundry to final inspection and testing under rigid control.

Fits Any Sewer From 8 to 30 Inches

416 The Expanding root cutter and sewer cleaner is adjusted in 30 seconds to fit any sewer from 8 to 30 inches, reports the Expanding Sewer Machine Co., 108 East Walnut St., Nappanee, Ind. The product cleans the entire sewer wall, top, and sides as well as the bottom, cutting and removing the roots and caked sediment, and putting the sewer system in almost 100% clean condition.

Lawn Seed

417 Information about its lawn seed, which is blended according to formulas that have been tested and improved throughout the years, will be supplied by The Albert Dickinson Co., 2764 W. 35th St., Chicago 32, Ill. The company states that its product, which is used in parks and on public grounds throughout the country, provides smooth velvety lawns.

Drinking Fountains And Street Washers

418 Drinking fountains, hydrants, and street washers, are made by The Murdock Mfg. and Supply Co., Cincinnati 2, Ohio, which reports that its equipment gives years of dependable and efficient service. For detailed information, write to the company.

Aerial Mapping

419 The Aero Service Corp., Philadelphia 20, Pa., reports that its photogrammetric engineers can produce topographic maps for an area as large as 210,000 acres in 160 days, which it has done for a new atomic energy facility, or it can tally a stock-pile covering an area as small as six acres. Full details on this method, which the company claims, is usually half the cost and time of ground surveys, may be obtained by writing to Aero Service Corp.

Roller Puts More Action in Compaction

420 According to the Buffalo-Springfield Co., Springfield, Ohio, its Gardner segmented roll used on Tandem rollers puts more action in compaction for street maintenance construction. The interchangeable roll can be employed for earth fills, stabilized bases, and hot and cold mix bituminous.

Playground Equipment

421 On request, The J. E. Burke Co., Fond du Lac, Wis., will send a copy of its catalog of playground equipment. When writing, address your query to Dept. K. Among the products are climbing structures, swings, slides, see-saws, merry-go-rounds, turning bars, and horizontal ladders. The manufacturer states that its equipment is strongly constructed with durable materials, resulting in low-cost maintenance.

Welding Accessories

422 A new 16-page, arc welding accessories catalog is announced by Hobart Brothers Co., Troy, Ohio, containing the complete line of Hobart arc welding accessories and supplies. This literature may be obtained by requesting Catalog EW-164-S.

Lighting Standard Has Higher Upsweep Bracket

423 The Hy-Lite standard has a new higher upsweep bracket, shorter pole height, granite finish, and precast butt base, reports the American Concrete Corp., 4727 N. Lamon Ave., Chicago, Ill. Savings in your street-lighting program are achieved because Design 660 economizes on installation costs, has provisions for overhead wiring, and needs no painting due to its water-polished granite surface.

Clay Pipe Products

424 What are your needs in clay pipe? Do you need vitrified pipe for sewerage? Do you need skip pipe or perforated pipe for drainage? Do you need septic tanks? Do you require liner plates? Does your airport need a segmented circle for guidance to incoming pilots? Get literature on all of these by writing the Robinson Clay Products Co., Akron 9, Ohio.

Fire-Proof Tops On Heating Kettles

425 Fire hazards are reduced when one employs the White heating kettles which have fireproof tops, reports the White Mfg. Co., Elkhart 1, Ind. For this reason, cutback and highly flammable street repair material can be heated safely in the machines. They are available in 65, 110, 165, 220, and 300-gallon capacities. White also produces concrete vibrators, front-end loaders, asphalt plants, and kerosene torches.

Small Two-way Radio

426 A new small two-way radio has been produced by the Sonar Radio Corp., 59 Myrtle Ave., Brooklyn, N. Y. The shockproof 9-tube VHF receiver is built for a.m. or f.m. and all frequencies from 27 to 173 m.c. When combined with Sonar's Model MB-26 transmitter, complete two-way mobile communicator, is available for civil defense, commercial, and governmental use.

Stainless Steel Coating For All Metal Surfaces

427 Solve severe corrosion problems by using Steelcote stainless steel coatings produced by the Steelcote Mfg. Co., Gratiot at Theresa, St. Louis 3, Mo. Resistant to alkali and caustics, oils, grease and alcohol, commercial and food acids, and petroleum derivatives, the coating is non-inflammable, odorless, and tasteless when dry. According to the manufacturer, it is economical to use and reduces depreciation and maintenance costs.

Civil Defense Badges

428 V. H. Blackinton & Co., Inc., Attleboro Falls, Mass., on request will send descriptive literature telling of its custom-designed badges for civil defense or auxiliary police. Emblems or state seals may be interchanged, estimates are furnished for badges from special designs, and available are enameled seals in standard civil defense colors—red, white, and blue. Metals used to make the equipment include nickel, rhodium, gold plate, and gold filled.

Mechanically Stoked Refuse Incinerator

429 On request, the Nichols Engrg. and Research Corp., 70 Pine St., New York 5, N. Y., will supply details of its mechanically stoked refuse incinerator plant.

Prevents Salt Corrosion In Snow and Ice Control

430 Banox is the new rust inhibitor that neutralizes the corrosive effects of street slush and salt brine; reduces the rusting of automobiles, municipal equipment, and structural steel, and ends the motorist's fears and complaints of rust. Manufactured by Calgon, Inc., Hagan Bldg., Pittsburgh 30, Pa., Banox is used by adding one pound of it to each 100 pounds of salt.

Fire-Fighting Apparatus

431 Is your city studying fire-fighting needs, particularly important during these critical days? If it is, be sure and get literature supplied by The Ahrens-Fox Fire Engine Co., Cincinnati 14, Ohio, whose wide range of fire-fighting equipment makes it particularly useful in meeting your specialized needs.

For Water Systems, Use Plastic Pipe

432 Yardley plastic pipe is employed for water or waste disposal systems—for cold water or corrosive liquids, suction, or discharge. Made from rigid or flexible lightweight material, the pipe and tubing are from ⅛ to 6 inches. According to the Yardley Plastics Co., 142 Parsons Ave., Columbus 15, Ohio, the equipment is easier to install and more economical to handle. Write for chemical resistance charts.

Accurate Water Meters

433 The Buffalo Meter Co., 2902 Main St., Buffalo, N. Y., reports that its line of water meters provides accuracy, and features simplicity of design with fewer parts, and simpler castings. Only a small stock of interchangeable parts is needed to keep the meters producing.

Makes Truck Self-Loading For Pipelines, Hydrants

434 According to Ray-Lind, Inc., Iron River, Mich., its type of loader is the city's handiest machine. Model ML 25 B makes a truck self-loading, is suitable for pipelines and hydrants, and has friction and ratchet brakes. Write for information.

Protective Masonry Coating

435 Coprox is the new copperized hard-cement coating which protects masonry against water seepage, dampness, and erosion, according to Coprox, Inc., 1270 Avenue of Americas, New York 20, N. Y. The manufacturer states that among its advantages over other protective masonry coatings are: increased density; resistance to hydrostatic pressures; tough, hard, washable surface, and fast colors. Contraction and expansion are minimized.

Warning for Air Contamination

436 Bendix-Friez wind equipment determines safe areas and directions for evacuation, reports the Instrument Division of the Bendix Aviation Corp., 1360 Taylor Ave., Baltimore 4, Md., pointing out that after a bomb strikes, dangerous elements are left in the air to drift and spread with the wind.

Fire Hose Dryer

437 The Circul-Air fire-hose dryer saves hose and shortens drying time, reports The Circul-Air Corp., 575 E. Milwaukee St., Detroit 2, Mich. Write for available booklet on the equipment which also is claimed to prevent mildew and rot and which air-conditions as it dries.

(See page 26 for more Bulletins)

Catalogs for You

Write direct to the manufacturers or use coupon on page 23

Shows How Much Green Light Is Left

438 A new traffic light accessory, designed to take guesswork out of traffic-light watching by drivers and pedestrians by introducing the element of time into the operation of regular traffic lights, is being produced by the Lundberg Mfg. Co., Inc., Jackson, Mich. The Main Flo-Control Traffic Light attaches to any regular traffic signal—four-way or single face, center span or pedestal mount, vertical or horizontal signal. In terms of a diminishing column of green light, both motorists and pedestrians can see at a glance how much safe time remains before the red signal.

Food-Waste Removal System

439 The Hotpoint municipal plan of food-waste disposal is the use of Hotpoint Disposalls which provide health protection, eliminate garbage-collection problems, and produce more digested sludge for fertilizer. According to the Hotpoint Disposall Dept. of Hotpoint, Inc., 5600 W. Taylor St., Chicago 44, Ill., this equipment will fit under almost any sink. Write for detailed information.

Fire Hydrant Has Threaded Breaking Ring

440 The Kennedy Valve Mfg. Co., Elmira, N. Y., on request will send a copy of its *Safetop Bulletin 105* which reports on its Safetop, the hydrant with the threaded breaking ring that gives positive connection and rigid alignment of the two standpipe sections.

1952

ELECTRICAL DEMANDS

CALL FOR

Leece-Neville ALTERNATORS

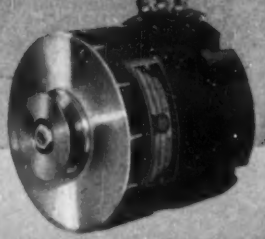
Today's accessory load takes more current from the battery than conventional d.c. generators can put back in. Batteries fail . . . vehicles break down . . . costs mount.

For 1952 performance, replace out-dated d.c. generators with the Leece-Neville AC-DC Alternator System, that gives you

25 TO 35 AMPS WITH ENGINE IDLING

There are Alternators for 6 and 12 volt systems with capacities from 50 to 150 amps.

Write the Leece-Neville Company, Cleveland 14, Ohio. Distributors in principal cities Service Stations everywhere.



YOU CAN RELY ON Leece-Neville

ALTERNATOR SYSTEMS • GENERATORS
STARTING MOTORS • REGULATORS • SWITCHES
FRACTIONAL HP MOTORS

Sewer Cleaning Service

441 A national sewer cleaning service that "will go anywhere at any time" is the motto of Ace Pipe Cleaning Contractors, Inc., 2003 Indiana Ave., Kansas City, Mo. The company offers cities a complete "turnkey" cleaning service for sewers, water pipes, and culverts. The methods of this concern are fully described in literature which will be sent upon request.

Catch-Basin Cleaner With Pneumatic Controls

442 Catch-basins cleaned quicker and more thoroughly are the result when a city uses the Netco catch-basin cleaner with pneumatic controls. It can be mounted on any short-wheel base truck having at least 8 feet in back of cab. The bucket is made in two sizes, 1¼ cubic feet or 1½ cubic feet, as required, and the equipment has a hoisting capacity up to 1,500 pounds. For literature, write to the Netco Division, Clark-Wilcox Co., 118 Western Ave., Boston 34, Mass.

Pipe Serves 100 Years

443 The United States Pipe and Foundry Co., Burlington, N. J., reports that St. Louis, Mo., has a cast-iron water main in service that was installed more than 100 years ago. Its cast iron pipe for water, gas, sewerage, and industrial service can withstand traffic shock and beam stresses. Information on prices and deliveries will be sent on request.

Steel and Tank Repair Service

444 The story of how to clean and paint elevated tanks and steel structures is told in a folder offered by the Steel & Tank Service Co., Commercial Bank Bldg., Charlotte 2, N. C. The company describes details and advantages of its method and cites the importance of proper tank maintenance.

Meters Flow of Sewage Plants

445 A new bulletin on *Chronoflo Telemeters, No. 230-H4* has been issued by Builders-Providence, Inc., 358 Harris Ave., Providence 1, R. I. The company reports that its equipment makes possible the transmission of information and controls over a simple two-wire electrical circuit for unlimited distances. Among its applications are measurement of flow of liquids and gases through venturi tubes, nozzles, or orifices, and flow over weirs, through Parshall flumes, and Kennison nozzles.

Air Compressor Oil

446 For details on the Texaco Simplified Lubrication Plan that enables one to handle all major lubrication with only six Texaco lubricants, write to The Texas Co., 135 E. 42nd St., New York 17, N. Y. The manufacturer's straight mineral air-compressor oil is used for normal conditions; rust-inhibited oil for rust in cylinders, coolers, lines, and receivers; heavy-duty, to prevent harmful formations of carbon and sludge, and compounded air compressor oil to combat excessive wear under wet cylinder conditions.

Concrete Pressure Pipe For Water Transmission Lines

447 Wherever pressure conditions permit, different classes of American reinforced concrete pressure pipe can be combined in the same water transmission line, reports the American Pipe and Construction Co., P. O. Box 3428 Terminal Annex, Los Angeles 54, Calif. American concrete cylinder pipe is made for higher pressure service, and American centrifugal pressure pipe for low and moderate operating heads.

Control Instruments For Water, Sewage Works

448 Control instruments for water and sewage works are described in Catalog No. 5000 issued by the Brown Instruments Division, Minneapolis-Honeywell Regulator Co., Wayne and Windrim Aves., Philadelphia 44, Pa. Outlined are specifications of 100 measuring and control instruments, and valves. Write for a copy of the catalog.

(See page 29 for more Bulletins)

MOBIL-SWEEPER AND ITS DEALERS

THANK THE PUBLIC OFFICIALS

148 MOBIL-SWEEPERS ORDERED & DELIVERED IN 1951

Mobil-Sweeper's Family of Dealers Extend Greetings For 1952

and advises early purchases of your anticipated requirements for street sweeping equipment because materials control can quickly alter production and delivery schedules.

Your sweeping budget will go farther when your city is equipped with Mobil-Sweepers. Operating under all conditions, Mobil-Sweeper is *unexcelled* in sweeping ability. Add to this the extra advantages of lower maintenance plus greater safety to drivers and you know why there's an ever-increasing demand for this sweeper.

CONSIDER ALL THE SAVINGS—Whether you use the central dumping system or haul refuse directly to the dump, Mobil-Sweeper's extra speed (travels at top legal speeds when not sweeping) reduces "dead-heading" time between sweeping area and dump. Less time is spent traveling from service yard to sweeping area.

LOWER MAINTENANCE COSTS—Because Mobil-Sweeper is built on a modified International Harvester Truck chassis, your regular maintenance methods and equipment for trucks is applicable to this sweeper. Here is a major saving in upkeep and your costs are materially reduced on specially designed parts and tools.

WHY A SAFER SWEEPER PAYS OFF—Even a slight injury is costly. That's why Mobil-Sweeper provides a heavy steel cab on every sweeper. The driver is protected from low hanging branches...he's protected by shatterproof windshields in accordance with safe driving methods. Visibility is better—no blind spots out front. Four-wheel hydraulic brakes assure safe stops even when sweeper is fully loaded. And all-weather comfort is afforded by the cab.

MOBIL-SWEEPER IS EASY TO MANEUVER—For effective sweeping, no full-size sweeper will out-maneuver a Mobil-Sweeper. It gets in and around parked cars with complete ease and clean sweeping... sweeps clean on sharp curb returns, up and down hills.

Your Community Will Find Mobil-Sweeper Best All Ways!

MOBIL-SWEEPER
DIVISION OF
THE CONVEYOR CO
3260 E. SLAUSON AVENUE
LOS ANGELES 58 CALIF.

CONVEYCO

THE CONVEYOR COMPANY
3260 East Slauson Avenue, Los Angeles 58, Calif. AC-13

Gentlemen:
Please send catalog with complete details and specifications for the Mobil-Sweeper.

Name _____ Title _____

Address _____ City _____

County _____ State _____

STEEL...

for Every Municipal Need

Shipped Quickly from Ryerson Stocks

Call Ryerson for the steel you need and you'll find we're always on the job.

Every day, cities and towns from coast to coast are being expertly served by the network of thirteen great Ryerson plants. Each plant has many kinds, shapes and sizes in stock. Each is equipped to accurately cut or otherwise prepare your steel to exact specifications. Ryerson specialists, whose recommendations are backed by more than a century of practical experience, will gladly assist you on any problem of application or fabrication.

Because of the national emergency, steel shortages are inevitable. But it is possible that many of your requirements may be among the carbon, stainless and alloy steels we have on hand for quick shipment. So for any kind of steel—anytime—contact your nearby Ryerson plant. You can be sure we'll do our level best to take care of you.

PRINCIPAL PRODUCTS

BARS—Carbon & alloy, hot rolled & cold finished.
SHAFTING—Cold fin., ground & polished, etc.
STRUCTURALS—Channels, angles, beams, etc.
TUBING—Seamless & welded mechanical & boiler tubes.
STAINLESS—Allegheny plates, sheets, etc.
PLATES—Many kinds, incl. Inland 4-Way Floor Plate.
SHEETS—Hot & cold rolled, many types.
MACHINERY & TOOLS—For metal fabrication.

RYERSON CERTIFIED STEELS

RYERSON STEEL

JOSEPH T. RYERSON & SON, INC. PLANT AT NEW YORK • BOSTON • PHILADELPHIA • CINCINNATI • CLEVELAND • DETROIT
PITTSBURGH • BUFFALO • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE

Obtain this Literature Free of Charge!

Write directly to the manufacturers or use the coupon on page 23

Posture-Designed Folding Chairs

449 The Samson folding chairs are posture-designed for extra comfort, constructed of steel for extra strength, and have special folding action for extra safety. According to Shwayder Bros., Inc., Public Seating Division, Detroit 29, Mich., the equipment is low in cost, gives long life, and is easy to handle, set up, fold, and store in the most compact space.

Free Discharge Valve For High Heads

450 A new 16-page color-illustrated Bulletin No. 156, issued by the S. Morgan Smith Co., York, Pa., features the Howell-Bunger free discharge valve for high and low heads. The company states that the chief advantage of the valve is the prevention of "pot holes" in the bed of a stream since the water is discharged in the form of a fine spray.

For Pipe Installation

451 The Giant Mfg. Co., Council Bluffs, Iowa, produces a small inexpensive tool that pushes pipe up to 15 inches diameter through the ground, under the frost line, at the rate of 1 to 5 feet per minute. The company claims that its equipment saves up to 80%. When writing for free booklet, address your query to Dept. P.

Trenching Machine Has 12 Cutting Widths

452 The 221 Trenchliner has 12 cutting widths from 16 to 36 inches with only three standard-size buckets, side cutters, and oversize teeth, which provide a wide range of trenching widths for installing city and subdivision mains, sewers, and pipelines. Full details on the equipment will be sent by the Parsons Co., Newton, Iowa.

Reflective Signs For Municipal Needs

453 On request, the Reflexite Corp., 114 Manhattan St., Stamford, Conn., will send literature on its reflecting materials for signs which include those for highways and routes, house numbers, automotive products and emblems, and display advertising. According to the company, Reflexite provides improved legibility both day and night, is self-cleaning, gives a long and useful service, and is vandal and damage resistant.

Water-Meter Boxes

454 Clark meter boxes, meter yokes, and connections are available for every type of meter installation and are used on all sizes of meter in every climate throughout this country and in foreign lands, reports the H. W. Clark Co., Mattoon, Ill. Water works and other officials interested in learning further about this equipment, may do so by writing to the company.

Non-Clogging Portable Pump

455 The Pelican is an automatic self-priming portable pump which has a suction lift up to 25 feet at sea level. Produced by The Gorman-Rupp Co., Mansfield, Ohio, it is non-clogging and simple to operate. Write for Bulletins 1-LW-13 and 7-LW-13 which describe this and other lightweight pumps.

Hydraulic Pipe Pushers

456 Greenlee hydraulic pipe pushers mean low underground pipe installation costs, according to the Greenlee Tool Co., 2032 Columbia Ave., Rockford, Ill. They have hydraulic power of from 6,500 pounds to 75 tons, eliminate extensive digging and tearing up of lawns and pavements, can push pipe under concrete pavements and railroad tracks without disrupting normal traffic, and have six speeds for varying soil conditions.

Uniform Fabrics

457 Producer of standard fire and police uniform fabrics for more than 80 years, Metcalf Bros. & Co., 45 E. 17th St., New York, N. Y., makes 12 to 18-ounce serges, tropical weight for shirtings, 18-ounce whipcord for breeches, as well as 20 and 30-ounce beavers and other standard fabrics. Write for illustrated printed matter.

Maintains Guide For Diesel Engines

458 A cartoon story entitled *Small Engine Maintenance Guide*, published by the Caterpillar Tractor Co., Peoria 8, Ill., discusses the six smaller sizes of Cat diesel and marine engines, and electric sets, as well as cooling, lubricating, air intake and exhaust and fuel supply systems. Copies of the booklet, Form 30246, may be obtained by writing the company.

Air Compressors For Street Construction

459 The length of time used on street construction is reduced when one employs the new Standard Jaeger compressors, according to The Jaeger Compressor Co., 505 Dublin Ave., Columbus 15, Ohio. The Jaeger Air-Plus delivers 125 feet of 100 pounds of air instead of the old standard of 105 feet, and it runs two heavy breakers at full pressure instead of a weak 70 pounds, breaking 30 to 40% more yardage. Write for a copy of Catalog JC-1.

For Ice Control

460 On request, the Baughman Mfg. Co., Inc., 611 Shipman Road, Jeffersonville, Ill., will supply full details on its line of ice-control equipment, among which is the Model ASK-3-SC spreader for spraying cinders, sand, chips, salt, chat, chloride, and gravel. Others include the sidewalk spreader, pull-type spreader, as well as those for attaching to end-gates of dump trucks, and for dump bodies.

Accounting Machine For Water-Works Use

461 The revolutionary Burroughs Sensimatic accounting machine with the "mechanical brain" is being used effectively on water-works customer billing, general ledger, budgetary ledger, payroll, and ledgers. Made by the Burroughs Adding Machine Co., Detroit 32, Mich., the machine saves working hours and reduces accounting costs. Write for complete information.

Heating Kettle For Street Repairs

462 For speedy heating of tar and asphalt for road, street, and airport runway repairs, municipalities use Connery Style W kettle, made by Connery Construction Co., 4000 N. Second St., Philadelphia 40, Pa. The equipment is made in 75, 110, 165, and 210 gallons. Write for a copy of Bulletin 87.

Street Lighting Problems?

463 If so, engineers of the Holophane Co., Inc., Street Lighting Dept., Newark, Ohio, will send you, without obligation, engineering data that should help make your street lighting requirements more effective. The company makes refractors, of which 600 were installed in the new luminaires of Dayton, Ohio, where 3.0 footcandles now shine in place of 0.76 footcandles.

Four-Cycle Gasoline Engines

464 The Briggs & Stratton Corp., Milwaukee 1, Wis., builds single-cylinder, 4-cycle, air-cooled gasoline engines which provide power for sand and material spreaders, and a wide range of other equipment for street maintenance and construction. Write for illustrated printed matter.

Mimeographed Speeds Up to 180 a Minute

465 Copies are duplicated at speeds up to 180 a minute with the use of the Modern mimeograph machine manufactured by the A. B. Dick Co., Dept. AC-252, 5700 W. Touhy Ave., Chicago 31, Ill. Copies can be made on different kinds of paper and card stocks in sizes ranging from 3 by 5 inches to 9 by 16 inches, and duplicated on both sides of the paper. For a free portfolio of Modern mimeographing samples, write the company.

Truck Loader Cuts Cost Of Street Maintenance

466 The Ernest Holmes Co., Chattanooga, Tenn., reports that its new truck loader cuts the cost of street and highway maintenance. It permits the driver to load, haul, dump, do light digging, grading, and cleaning-up. For details on the self-loader with elbow action, write the manufacturer.

Pneumatic Ejectors

467 On request, the Yeomans Brothers Co., 1433 N. Dayton St., Chicago, Ill., will supply a copy of its new 12-page catalog describing all types of Shone pneumatic ejectors. Bulletin 4000-C presents complete information on both mechanically and electrically controlled ejectors for pumping, sewage drainage, and solids-carrying liquids.

Playground Equipment Investment in Fun

468 Municipalities invest in fun for the play-time of its youth when it provides equipment for children's playgrounds. Such equipment is produced by the Jamison Mfg. Co., 8800 S. Mettler St., Los Angeles 3, Calif., which has prepared Catalog No. 26 telling of its slides, merry-go-rounds, swings, and others, that are designed for safety as well as for fun.

Fertilizer Spreaders Make Parks More Green

469 Fertilizer spreaders are manufactured by the Masters Planter Co., Masters Bldg., Benton Harbor, Mich. The company's commercial fertilizer distributor for parks, cemeteries, golf courses, and estates, has a rotary agitator that insures free flow of material and is equipped with a perforated scatter board which makes the machine sift as it sows as it distributes.

Sewage-Wastes Underdrains

470 Armcre underdrains provide adequate disposal of sewage wastes, reports the Ayer-McCarel-Reagan Clay Co., Brazil, Ind. They give sufficient aeration and drainage for the proper oxidation of filter bed. All Armcre blocks are a one-piece unit made from fire clay, vitrified and salt glazed. For descriptive literature, write the manufacturer.

Water-Works Valves Prevent Hammer, Shock

471 Hammer or shock are prevented when municipal water-works men employ Golden-Anderson cushioned valves, according to the Golden-Anderson Valve Specialty Co., 2095 Keenan Bldg., Pittsburgh 22, Pa. Bulletin W-4 reports on the cushioned altitude valve for automatic water-level control, Bulletin W-2, on the cushioned relief valve to remove surge and hammer, and Bulletin W-1, on the cushioned swing check valve for automatic operation with pump.

Correct Fire Protection

472 Information on how to use a fire extinguisher and the right type of extinguisher for the class of fire involved is given in a new 32-page booklet issued by the American-LaFrance-Foamite Corp., Elmira, N. Y. Entitled *Correct Fire Protection*, the publication illustrates and describes the various sizes of units.

(Please turn to page 30 for more Bulletins)

* This is absolute maximum tolerances of Blackinton trimming tools — in most cases the tolerances are held much closer than .001.

What we mean by a "close shave" is precision trimming — for only with carefully machined cutting tools with exacting tolerances will your badge have that clean, smooth, "close shave" look. Look at any Blackinton badge; notice the smooth edges; the perfect trim. Here is just another quality feature that spells BLACKINTON.

Ask your dealer about Blackinton Badges the next time he calls.

100 years experience in badge manufacturing is our proof of the finest quality badges.

BLACKINTON

C. H. BLACKINTON & CO., INC. ATTLEBORO FALLS, MASS.

BADGES for Police, Fire, Town, City, County, State Officials, Civilian Defense, Plant Protection, Junior Police; also Transportation badges — Bus, Truck, and Taxi.

Catalogs for You

Write directly to the manufacturers, or use coupon on page 23

Centrifugal Cast Iron Pipe

473 Almost entirely automatic in operation are McWane's centrifugal pipe-casting machines, reports the McWane Cast Iron Pipe Co., Birmingham, Ala. Each machine makes an average of one McWane Q-check cast-iron pipe every two minutes from 4-inch through 12-inch sizes. For further information, write the company.

Build Sewers Without Tearing Up Pavements

474 Armco tunnel liner plates for underground sewer construction eliminate the necessity of torn pavements, barriers, or traffic detours, reports Armco Drainage and Metal Products, Inc., 1052 Curtis St., Middletown, Ohio. Although the plates are strong, one man can easily carry, hold, and bolt a section into place. No special equipment is required, and there is no need to replace expensive pavements when the job is finished.

Effective Pest Control

475 Alert municipal officials begin planning now for an effective method of killing insect pests when summer arrives. An effective pest-control program at low cost is reported by the A. B. Farquhar Co., 2636 Duke St., York, Pa. Farquhar Iron Age mist sprayers are employed on parks, playgrounds, golf courses, and other places where insect pests are a problem. Model 125 has a 22-hp. 4-cylinder Wisconsin engine which drives cast aluminum axial flow fan at 87% efficiency, delivering 6,000 to 11,000 cubic feet of air per minute at 90 to 125 mph.

Two-way Radio for Traffic Control

476 Harley-Davidson Servi-Cars are equipped with two-way radios and aid police in solving traffic congestion. The Harley-Davidson Motor Co., Milwaukee 1, Wis., also produces police motorcycles and sidecars. On request, it will send a copy of its *Police Motorcycle Booklet* which reports on the use of the equipment in law enforcement and accident prevention work.

Effective Fog For Fighting Fires

477 The Barton Super-Fog gun provides the most effective fire-fighting fog known, according to the American Fire Apparatus Co., P. O. Box 1024, Main St. Road, Battle Creek, Mich. The company states that American fire engines equipped with this product will give extra fire-fighting power. Write for literature.

Snow Loader Converts To All-Weather Usage

478 The Barber-Greene Co., Aurora, Ill., makes the Model 522 snow loader, a machine which self-propels and self-feeds at the rate of five yards per minute, and which converts to an all-weather bucket-loader at negligible cost. Model 548A removes up to 20 yards of snow per minute. Write for descriptive literature.

Pumps for Sewage And Flood Control

479 Bulletin W-314-B2 on vertical propeller pumps for flood control, drainage, irrigation, and similar low head services is announced by the Worthington Pump and Machinery Corp., Harrison, N. J. Freeflo pumps for sump, sewage and drainage service is reported in Bulletin W-317-B12. A request on your letterhead will bring you copies of these bulletins.

(See page 34 for more Bulletins)

They saved the day when the regular power failed

Two "Caterpillar" D13000 Engines provide standby power for the Southern Wyoming Utilities water plant in Green River. Each develops 150 horsepower for maximum duty.

In addition to the two "Cat" Diesel Engines housed in this plant as standby power for Green River, Southern Wyoming Utilities employs other D13000s for similar work in other communities.

One of the most serious crises that can confront a community is the breakdown of its water supply. Lack of water for drinking, sanitation and fire fighting menaces health and property, so an effective preventive measure against this grim possibility is an invaluable investment.

Consider, for instance, how such a precaution saved the day in Green River, Wyoming. When the regular power failed at the pumping station, there wasn't a moment's break in the water supply. Southern Wyoming Utilities had installed two "Caterpillar" Diesel Engines as standby power, and they instantly took over the pumping job. Both are D13000s, each developing 150 horsepower for maximum duty. One drives a centrifugal pump delivering 1,000 g.p.m. against a 300-foot head. The other drives a vertical turbine pump with a capacity of 1,500 g.p.m. against a 170-foot head. Southern Wyoming Utilities, with headquarters at Rock Springs, uses other "Cat" D13000 Engines on similar work.

Instant response is an important requisite in standby power. Because of their record in emergencies and their economical performance in the long run, "Cat" Diesel Engines and Electric Sets are found in many fields – in utilities, in municipal, county, state and federal departments and in thousands of contracting and industrial concerns. Users have discovered that "Caterpillar" Dealer service is competent and always available. They have also discovered that proper maintenance by their own personnel pays off.

A few minutes' daily care keeps a sturdy "Caterpillar" unit in excellent condition and adds many extra hours to its working life.

CATERPILLAR, PEORIA, ILLINOIS

CATERPILLAR

REG. U. S. PAT. OFF.

DIESEL ENGINES • TRACTORS
MOTOR GRADERS • EARTHMOVING EQUIPMENT

Barber-Greene

840 BITUMINOUS PAVING PLANT

B-G 840 Paving Plant, showing use of bulkhead feed with two-gate feeder for proportioning sand and gravel. 2, 3 or 4 aggregates may be blended in this manner.

PRACTICAL . . . PROFITABLE

UP TO 40 T. P. H.

The capacity range of this B-G Paving Plant has proved to be the most practical for a broad range of users. Output is high enough to supply materials for average-sized new construction and resurfacing jobs—investment is low enough to assure profitable operation at minimum capacities, or for intermittent operation.

ALL TYPES OF MIXES

Bituminous mixes of all types are produced at lowest cost with this B-G Plant. This includes the full range—all temperatures, all gradations and all binders. For "high-type" mixes, the aggregates are blended at the feeding end. Quality and uniformity are consistently high.

TRULY PORTABLE

Each basic unit of this plant—Mixer and Dryer-Dust Collector—is mounted complete on its own trailer-type pneumatic-tired chassis. Built-in hot and cold elevators and dryer stack fold down for transport. There is a minimum of dismantling—the plant can be moved and readied for work in new locations in a few hours' time.

EASIEST TO ERECT

No special erection equipment is needed to set up a B-G Paving Plant. No excavation or footings required. Units are spotted in place by truck, adjustable jacklegs are lowered to ground level, and the plant is ready for operation once the required auxiliary equipment is in place.

LOW-COST MAINTENANCE

The B-G Model 840 Paving Plant is easy to maintain. All moving parts are quickly accessible for inspection and adjustment. B-G Distributors offer fast emergency parts service, and are staffed with factory-trained experts to help you keep your B-G Paving Plant at top operating efficiency.

AUTOMATIC PROPORTIONING

Simple to understand and to operate, the B-G Paving Plant eliminates the human element in producing a consistently uniform mix. Once the bitumen and aggregate proportions have been set, they cannot vary as the positive displacement pump and aggregate apron feeder are positively interlocked. Proportioning is continuous, automatic and accurate.

2158-A

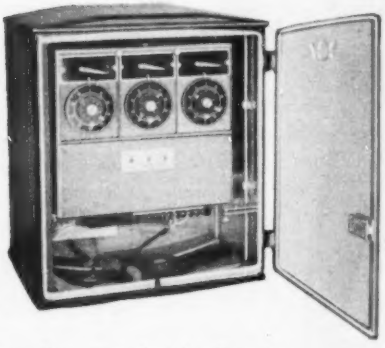
BARBER-GREENE COMPANY

AURORA, ILL., U. S. A.

See your B-G Distributor

For Better Flow— add Eagle GO

THE CONTROLLER WITH THE HIGH 'IQ'



Do you have a complicated traffic problem? If you have problems involving varying density of traffic or anticipate added complications at intersections now in need of traffic control . . . The Eagle "EF" controller is the equipment for you. Write for bulletin E10 today.

Eagle Signal has the most complete line of traffic control equipment available, engineered to fit your individual needs with an eye to the future. Cities large and small, from coast to coast, have appreciated smoother flowing traffic and have realized large savings with lower maintenance. Let Eagle Signal trained engineers help you solve your traffic problems. See your nearest representative or write Eagle Signal today.

EAGLE SIGNAL
CORPORATION *Moline, Illinois*

"The Chief says to get in there fast! Get the Scott Air-Paks"

PROTECT LIVES . . . KNOCK FIRES DOWN FASTER

with Scott Air-Pak TRADE MARK
BREATHING EQUIPMENT

• When the building's charged with smoke and you've got to get to the source of the fire fast . . . slip on a SCOTT AIR-PAK in seconds and start to breathe that *cool, fresh air.* No matter how hard you work, you get relaxed comfortable breathing when *your life depends on it.* There's no fogging up of masks to restrict your vision, no worry about making your voice heard by others. You'll feel safer and put those fires out faster, make those rescues quicker, when you're wearing your SCOTT AIR-PAK.

Your Scott Distributor will gladly give you a FREE DEMONSTRATION.

WRITE TODAY for illustrated bulletin 510.

ESTABLISHED IN 1932 Scott FOR SAFETY—FOR SERVICE

SAFETY EQUIPMENT DIVISION
SCOTT AVIATION CORP.
191 ERIE STREET LANCASTER, N. Y.
Canada: Safety Supply Co., Toronto — Branches in principal cities
Export: Southern Oxygen Co., 157 Chambers Street, New York 7, N. Y.

Other Catalogs

Write directly to the manufacturers, or use coupon on page 23

Provides Positive Seal Of Pavement Joints

480 According to The Flintkote Co., Industrial Products Division, 30 Rockefeller Plaza, New York 20, N. Y., Flintseal is a rubber asphalt thermoplastic compound that seals roadway joints, doesn't lose bond at low temperature or flow in hot weather, and remains extensible and compressible through complete cycles of expansion and contraction of the concrete. Write for a free copy of the new Flintkote Industrial Products *Digest.*

Radio-Telephone System For Police and Fire Units

481 A radio-telephone system suitable for police and fire equipment is the Radiopak, made by the Kaar Engrg. Co., Palo Alto, Calif., which points out that its product provides lowest battery drain, exceptional voice quality, and greater-than-ever stability and sensitivity. The Radiopak, suited for three-wheeled motorcycle use, has a frequency range of 152,174 mc and power output of 10-12 watts.

A Safe System Of Traffic Control

482 An illustrated manual and colorful brochure may be obtained from the Interstate Rubber Products Corp., 908 Avila, Los Angeles, Calif., which manufactures Trafficones for traffic control. Made of rubber, but as strong as steel, the Trafficones require a minimum of storage and transportation space. Trafficones weigh 6½ pounds, are 28 inches high, and with adapter sign, 40 inches in height.

Machine Copies Anything, Anywhere

483 The Photo-Copier is a portable machine that copies anything, anywhere, claims F. G. Ludwig Associates, 71 Pease Road, Woodbridge, Conn. It can be carried in a briefcase, copies curved text near binding of heavy volumes, and eliminates longhand-copying and proofreading notes. Write for literature on this equipment which is priced as low as $39 complete.

Remove Water Impurities By Precipitation

484 A free bulletin is available from The Permutit Co., Dept. AC-1, 330 W. 42nd St., New York 18, N. Y. The literature reports on the Precipitator which removes water impurities. Operating on the principles of precipitation, absorption, settling, and upward filtration, it is adaptable for water softening, removal of turbidity, color, taste, odor, alkalinity, silica, and fluorides.

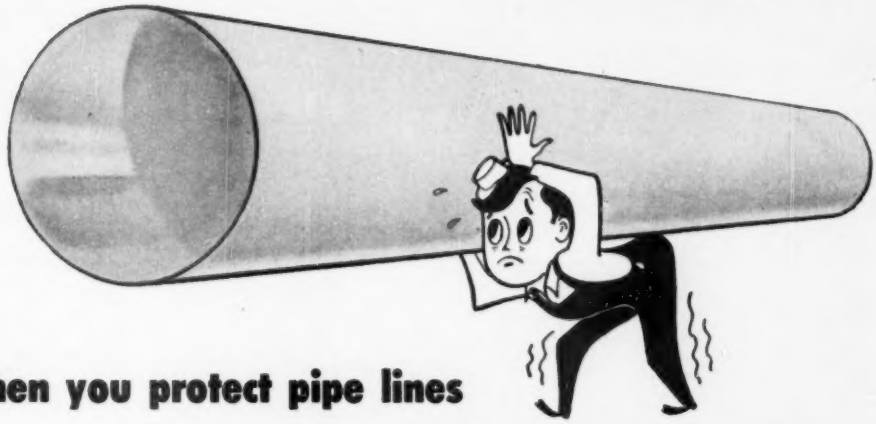
Pipe Puller, Pusher For Water, Gas Lines

485 Cut costs and save time by employing the Trojan pipe puller and pusher, which simplifies installation or renewing water and gas service lines under pavement. Made by The Trojan Mfg. Co., 1112 Race Drive, Troy, Ohio, Model A is for ½ to 1-inch pipe and has 15 tons of pushing pressure, while Model B has three pushing speeds and will push up to 2-inch pipe without additional dogs, clamps, or wedges.

Protect Pipelines With Enamel Coats

486 Bitumastic 70-B enamel protects pipelines from shrinking, according to the Koppers Co., Inc., Tar Products Division, Dept. 222-T, Pittsburgh 19, Pa. This durable enamel coats interior surfaces with a smooth, spun lining—a lining that prevents rust, corrosion, and tuberculation. The product saves money on pumping costs because it keeps flow capacity high. It also protects exterior surfaces of pipelines.

NO NEED TO SPECIFY OVER-SIZED PIPE



...when you protect pipe lines with BITUMASTIC® 70-B ENAMEL

PIPE LINES DON'T "SHRINK" when they're protected by Bitumastic 70-B Enamel. This durable enamel coats interior surfaces with a smooth, spun lining—a lining that prevents rust, corrosion and tuberculation.

With this kind of protection, there's no need to waste money on *over-sized* pipe in order to allow for future "shrinkage." You select pipe for your water lines solely on the basis of desired capacity.

Bitumastic 70-B Enamel saves money on pumping costs, too. That's because it *keeps* flow capacity high. It isn't necessary, even after decades of service, to install bigger pumps that cost more to buy and operate.

Bitumastic 70-B Enamel also protects exterior surfaces of pipe lines. It prevents pitting and leakage caused by soil corrosion. Here, again, you save money on maintenance and replacement costs.

It will pay you to protect your community's steel pipe lines with Bitumastic 70-B Enamel. If you wish, our Contract Department will handle your coating jobs from start to finish, furnishing skilled men and specialized equipment. Write for full information.

KOPPERS BITUMASTIC ENAMELS

KOPPERS COMPANY, INC., Tar Products Division, Dept. 222-T, Pittsburgh 19, Pa.

DISTRICT OFFICES: BOSTON, CHICAGO, LOS ANGELES, NEW YORK, PITTSBURGH, AND WOODWARD, ALA.

CUT DIGGING COSTS

with the

new Sherman Power Digger

Patented, actuated bucket gives you selective digging action, better loading, greater versatility.

All-hydraulic action—made possible by heavy-duty hydraulic cylinders—assures efficient performance.

SPECIFICATIONS

Shovel reach below ground surface	8 feet
Digger reach behind tractor	10 feet
Swinging arc	140°
Trench width, standard digging shovel, single cut	18 inches
Digging shovel capacity	3.5 cu. feet
Loading shovel capacity	.5 cu. feet
Loading clearance, digging shovel, loaded	7 feet
Loading clearance, loading shovel	10 feet

Standard tractor mounting gives unmatched maneuverability and transportability.

•

Digs ditches, trenches, footings, culverts, basements and other excavations.

•

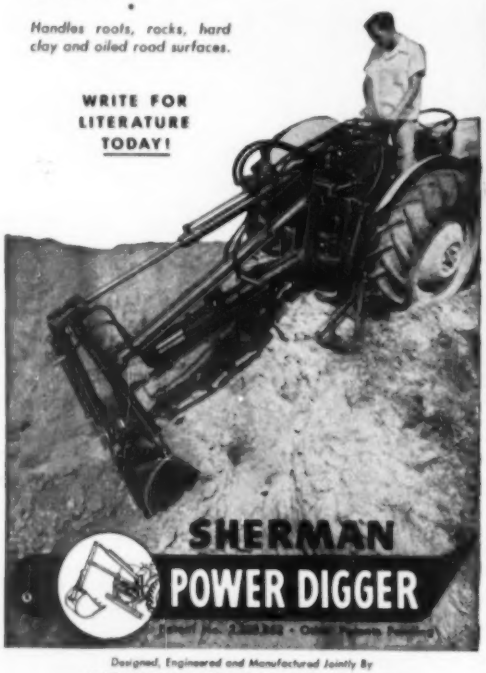
Handles roots, rocks, hard clay and oiled road surfaces.

Works well behind the tractor at any angle.

•

Actuated bucket raises high enough to load standard dump truck.

WRITE FOR LITERATURE TODAY!



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You Can Expect These Advantages With

TENNESSEE CORPORATION

Ferri-Floc

1. Rapid Floc Formation?
2. PH correction?
3. Taste and odor control?
4. Color removal?
5. Softening?
6. Ease of operation?
7. Bacterial removal?
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9. Turbidity removal?
10. Economy?

Ferri-Floc a superior coagulant offers many advantages — Here's what you can expect with Ferri-Floc.

FREE — Let us send you without cost, our new booklet on economical and efficient coagulation. Just send a card or letter to Tennessee Corporation, Grant Building, Atlanta, Georgia or Lockland, Ohio.

TENNESSEE CORPORATION

SEWAGE SLUDGE GAS SAFETY EQUIPMENT

---for SAFE,SURE gas utilization

Completely eliminate fire and explosion hazards! P.F.T. gas safety equipment includes: waste gas burners, flame traps, pressure relief units, gas pressure regulators, pressure gauges, condensate and sediment accumulators. Write for Bulletin 221 for complete details!

P.F.T. **PACIFIC FLUSH TANK CO.**

Waste Treatment Equipment Exclusively Since 1893

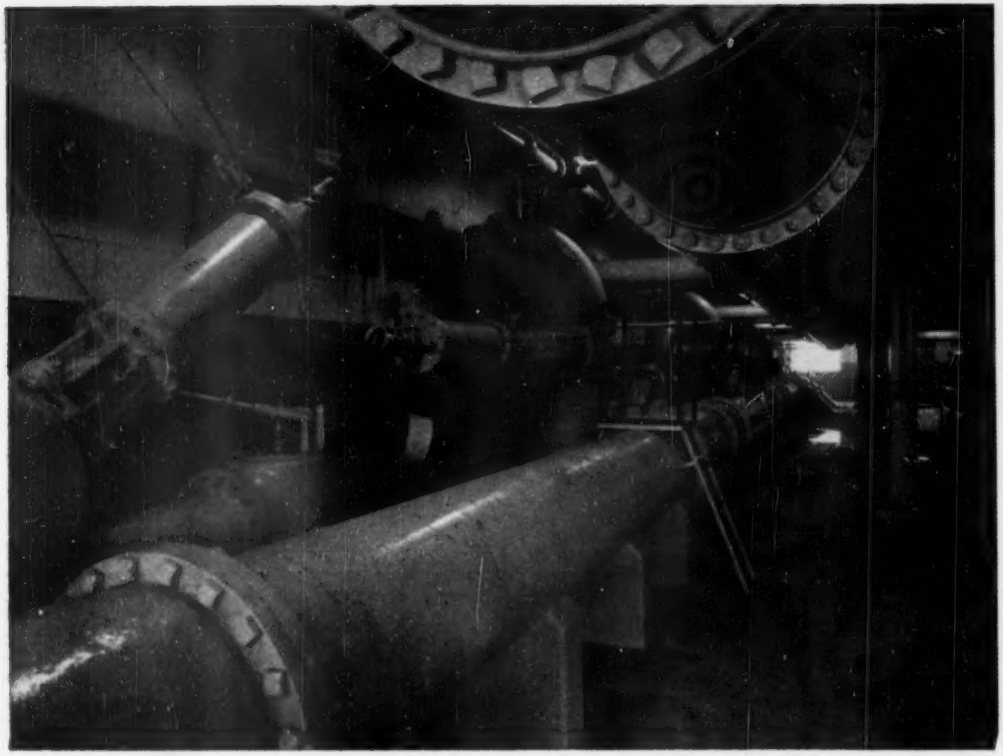
4241 RAVENSWOOD AVE. CHICAGO 13, ILLINOIS

CITY MANAGER WANTED

Ocean resort town in Delaware has immediate opening for a City Manager. Winter population is 3000 and summer population, approximately 20,000.

Address inquiries to: Box No. 356

THE AMERICAN CITY
470 Fourth Avenue
New York 16, N. Y.



MONO-CAST Pipe For Every Service Condition

"Mono-Cast" is the trade name for ACIPCO pipe cast centrifugally in sand-lined molds. Uniform metal section, high physical strength, endurance, and freedom from inclusions are salient properties which have established the name "Mono-Cast" as synonymous with "highest quality cast iron pipe." It can be supplied with joints for conveying water, gas, oil, gasoline, sewage, salt brine, ashes—and in fact, just about everything that a pipe line can conceivably convey.

Being cast iron, Mono-Cast Pipe enjoys an enviable reputation. Cast iron pipe has had over three hundred years of service abroad and more than one hundred years of service in the United States. It is satisfactorily serving in locations where especially severe external and internal corrosion conditions exist. Mono-Cast Pipe is designed to give super-service; and its wide acceptance and splendid performance bespeak its excellence and the confidence and esteem in which it is held by those who are using it.

Since the beginning of our Company, nearly half a century ago, ACIPCO has constantly worked hand in hand with engineers, contractors and superintendents in solving piping problems in their respective fields. Refer your next piping job to ACIPCO, and utilize the extensive manufacturing facilities of the largest individual cast iron pipe foundry in America.

AMERICAN CAST IRON PIPE COMPANY

Birmingham 2, Alabama

Dallas Houston El Paso Pittsburgh Kansas City New York City
Chicago Minneapolis Cleveland Los Angeles San Francisco Seattle

has the products, the plants and mobile equipment to handle your municipal, industrial & defense projects

When people are counting on you to meet vital construction schedules . . . you've got to have material from a convenient source. Universal has a reputation for delivering material which is right the first time . . . plus the equipment and facilities to give you concrete pipe when you need it . . . where you need it. 23 major plants, located in primary building areas, gives you a source of supply where you want it!

ATTENTION CONTRACTORS DOING BUSINESS ABROAD! Universal can supply you with pipe making machines and all necessary equipment for making pipe. Details on request.

Highway Cribbing Wall

Site-Cast Equipment

Culvert Pipe Construction

Flat-base Culvert

Package Bridge

Sewer Pipe Project

UNIVERSAL CONCRETE PIPE CO.

Home Office: 297 S. HIGH ST., COLUMBUS 15, OHIO

UNIVERSAL CONCRETE PIPE CO. PLANTS—Decatur and Dothan, Ala.; Tampa and Miami, Fla.; Atlanta, Ga.; Keyvil, N. J.; Binghampton, Port Washington, Rochester and Syracuse, N. Y.; Columbus and Zanesville, Ohio; Norristown and Pittsburgh, Pa.; Nashville, Tenn.; Clarksburg, New Martinsville and Wheeling, W. Va. UNIVERSAL AFFILIATES—Concrete Pipe Co. of Ohio with plants in Cleveland, Youngstown and Sandusky, Ohio and Erie, Pa.; Florida Concrete Pipe Co., Ocala, Fla.; Dixie Concrete Pipe Co., Louisville, Ky.

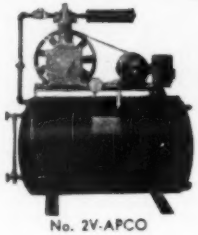
No. IV-APCO

APCO-V-APCO PRIMERS

FOR CENTRIFUGAL PUMPS
AUTOMATIC POWER OR TANK PRIMERS
SINGLE OR DUPLEX UNITS
DUAL DRIVE WITH GASOLINE ENGINE
ALL UNITS ENTIRELY AUTOMATIC

AIR RELEASE VALVES

FOR VENTING AIR OR GASES
17 TYPES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VALVE AND PRIMER CORPORATION 356 WEST HURON ST., CHICAGO 10, ILL.

SWENSON SIDEWALK SAND SPREADER

A new fast way to cover icy walks with sand, ashes, cinders, salt, etc.

Can be used on road jobs all year 'round.

1-yard hopper

Write for circular.

SWENSON SPREADER & MFG. CO., Lindenwood, Ill.

"GUNITE" CONCRETE (Since 1915)

SPECIALISTS IN CEMENT GUN WORK

RESERVOIR LININGS (NEW AND OLD) • CONCRETE AND MASONRY REPAIRS • STEEL ENCASEMENT • FIREPROOFING • STEEL COAL BUNKER, STACK, HOPPER, AND PLATE LINING • SEWER LINING AND REPAIRING • CANAL, DITCH, AND DRAIN LINING.

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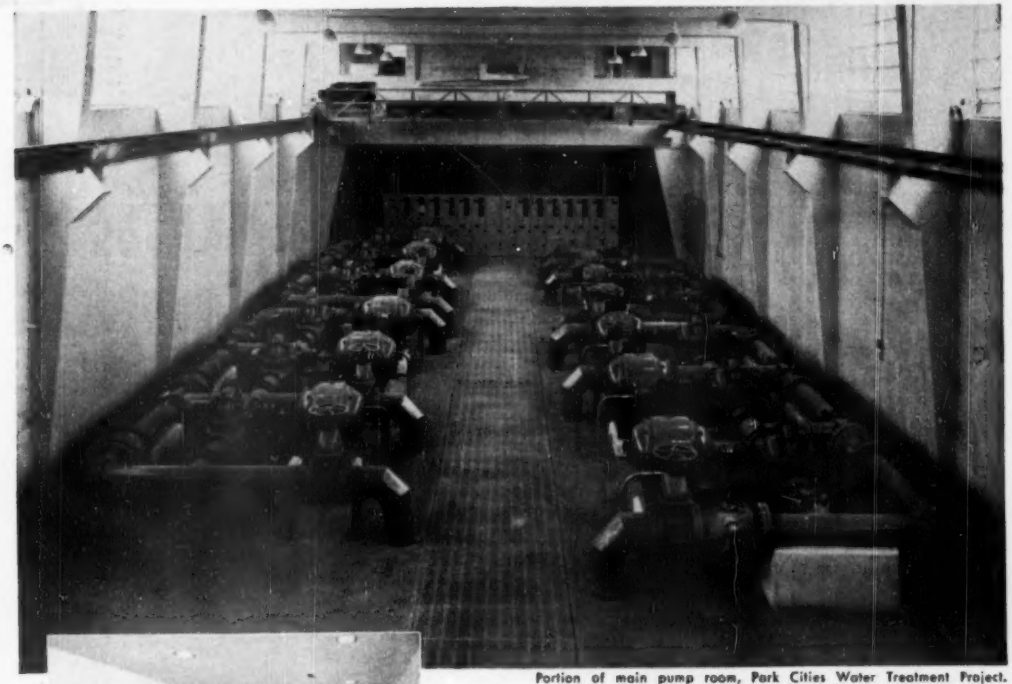
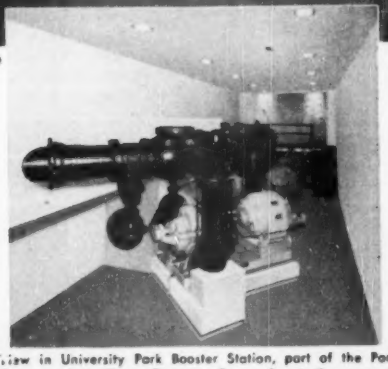
Ole K. Olsen Co., 823 Perdido St. New Orleans, La.
Philip D. Barnard, 2036 Addison, Houston 5, Tex.
Western Steel Prod. Co., 1755 W. 13th Ave., Denver 4, Colo.

See our catalog in Sweet's

Now...Dallas Park Cities *are pumping with Economy!*



Portion of main pump room, Park Cities Water Treatment Project. Shown are 13 of the 22 Economy Pumps installed on this project.



View in University Park Booster Station, part of the Park Cities project. These Economy Pumps boost the pressure going to the overhead storage tank, located 5 miles from the treatment plant.

in new Park Cities, Texas, Water Treatment Plant

Economical operation over a period of years was a primary requisite of the pumps for Park Cities Water Treatment Project, Dallas. In selecting pumps, Powell & Powell, Consulting Engineers, drew up specifications which took into consideration cost of equipment, efficiency of each unit and efficiency of units operating in series, plus rigid structural requirements and refinements of mechanical detail. Under this very exacting evaluation formula, Economy Pumps, designed especially for water works service, supplied by the Lone Star Pump and Machinery Co., were selected, on the Dallas County project.

It pays to specify Economy Pumps for water supply. For detailed information and illustrated catalogs write today to Dept. AB-2.

Economy Pumps, Inc.

SEDGLEY AVE. AT 19TH AND LEHIGH, PHILADELPHIA 32, PA.

FLEXIBLES "Clean Up" KANSAS CITY UNDERGROUND!

. . . following the Flood Disaster

30 "FLEXIBLE" power bucket machines have been working in the Kansas City flood area since August! This is no doubt America's ***all-time-biggest*** sewer cleaning job. To aid the stricken area quickly, many cities from as far away as Ohio, Minnesota and Texas made their "FLEXIBLE" equipment available under "FLEXIBLE" supervision, in addition to those immediately supplied by the factory.

America recognizes "FLEXIBLES" with the Red Cross and National Guard as essential in emergencies.

Write for FREE DATA to Dept. A

"FLEXIBLE"

SEWER-ROD EQUIPMENT CO.

9055 VENICE BOULEVARD, LOS ANGELES 34, CALIF.

41 Greenway St. — Hamden 14, Conn.
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801 E. Escelsior Blvd. — Hopkins, Minn.
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AMERICA'S LARGEST MANUFACTURER OF PIPE CLEANING TOOLS & EQUIPMENT

PREVENT PARKING METER "FREEZE-OUTS"

WITH

LOCK-EASE®

Graphited **LOCK FLUID**

Condition your city's parking meters against operating failures due to freezing, sticking or rust. Use LOCK-EASE, a specially compounded lubricant that seals out moisture and dust. Penetrates quickly, leaves a graphited, rust proofing film on working parts. Lowers maintenance . . . prevents loss of revenue and annoyance to public.

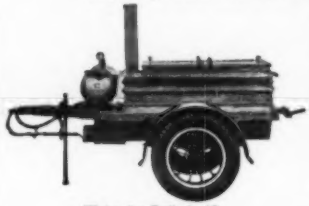
- Endorsed by parking meter manufacturers and locksmiths.
- Available in a four-ounce Controlled Flow "drop or stream" container.
- Easily applied through lube holes or keyways.
- An all-weather product to prevent freezing due to moisture, dirt and corrosion.

Order from hardware or auto jobber or write.

AMERICAN GREASE STICK COMPANY
Muskegon, Michigan

AGS PRODUCT

Connery's Style W Heating Kettle Made in 75, 110, 165 and 210 Gallons.



For speedy heating of Tar and Asphalt for road, street and airport runway repairs use Connery's style W kettle, the most efficient heating kettle of its kind.

Write for Bulletin 57.

CONNERY CONSTRUCTION CO.

4000 N. Second Street — Philadelphia 40, Pa.

Throughout **America—Dickinson Lawn Seed**

In parks and on public grounds throughout America you will find smooth velvety lawns built with time proven Dickinson lawn grass seed. Quality seed, blended according to formulas that have been tested and improved throughout the years. Write for complete information.

The Albert Dickinson Company, 2704 West 35th Street, Chicago 32, Ill.

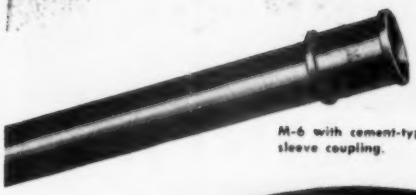
DICKINSON

Yardley PLASTIC PIPE for water or waste disposal systems

Whatever the need . . . for cold water or corrosive liquids, suction or discharge . . . there's a Yardley Plastic Pipe for the job.

Made from rigid or flexible light-weight material. Acid and alkali resistant. Won't rot, rust or corrode. Produced in a full range of pipe and tubing sizes, ⅛" through 6". Complete line of standard fittings and adapters. Easier to install, more economical to handle.

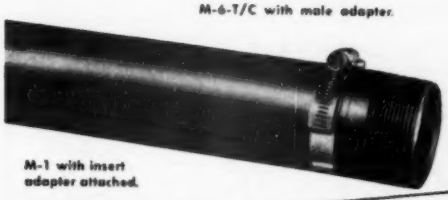
Send for chemical resistance charts.



M-6 with cement-type sleeve coupling.

M-2 flexible type.

M-6-T/C with male adapter.



M-1 with insert adapter attached.

YARDLEY
PLASTICS CO
142 Parsons Ave. ADams 9315
Columbus 15, Ohio

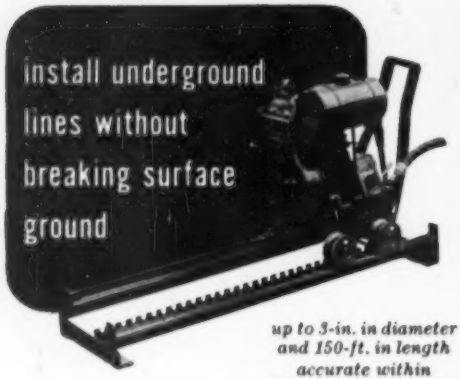
YARDLEY M-1 and M-2 FLEXIBLE PIPE SPECIFICATIONS

PIPE SIZE	NOMINAL O. D.	NOMINAL I. D.	CALCULATED B. P. P. S. I.	APPROXIMATE WT. PER FT.	NORMAL SHIPPING LENGTHS
⅛"	.820	.620	540#	.092	400' Coils
¼"	1.080	.840	330#	.141	400' Coils
1"	1.340	1.100	200#	.179	300' Coils
1¼"	1.640	1.360	200#	.263	300' Coils
1½"	1.900	1.610	200#	.357	250' Coils
2"	2.375	2.067	170#	.434	200' Coils
3"	3.500	3.068	165#	.899	100' Coils
4"	4.500	4.026	150#	1.220	25' Straight
6"	6.675	6.065	115#	2.400	25' Straight

YARDLEY M-6 AND M-6-T/C RIGID PIPE SPECIFICATIONS

PIPE SIZE	APPROXIMATE WT. PER FT.	NOMINAL I. D.	NOMINAL O. D.	CALCULATED BURST PRESSURE P.S.I. AT 80° F.
⅛"	.053	.476	.600	700
¼"	.080	.715	.855	625
1"	.138	.970	1.140	550
1¼"	.20	1.230	1.420	525
1½"	.32	1.510	1.730	490
2"	.45	2.00	2.250	400
3"	.555	3.000	3.250	375
4"	.880	4.000	4.300	342
6"	1.940	6.000	6.440	335

M-6 and M-6-T/C recommended for working pressures up to 20% of calculated bursting pressures where temperatures do not exceed 125°. For M-1 and M-2 working pressures, use 60% of calculated burst. . .



up to 3-in. in diameter
and 150-ft. in length
accurate within
1-inch of target area!

FOR WATER, GAS, SEWER, TELEPHONE, TRAFFIC SIGNAL AND MANY OTHER TYPES OF LINES!

Bore a 3-inch hole at 1½ f.p.m....with automatic warning of underground hazards. The EARTHWORM bores 1000 feet of underground line per gallon of gasoline. Use pipe or conduit as drill stem sections and leave as permanent installations. Save pavement and labor...save thousands of dollars per year...with the proved-in-the-field advantages of EARTHWORM!

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"FERRO" signs are nationally known, tested, *proved*. Finest quality steel, deeply embossed, finished in brilliant, permanent porcelain enamel.

If you have allied lines and a following, write today for further information.

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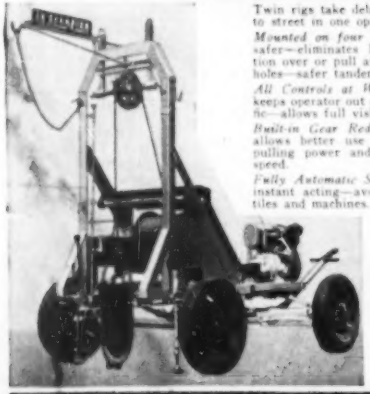
NEW IMPROVEMENTS
Cable Drum Clutch
Upper Arch Sheave
Automatic Cable
Level Wind

OK CHAMPION
Power Sewer Cleaner



Twin rigs take debris from sewer to street in one operation.

Mounted on four wheel trucks—safer—eliminates lifting to position over or pull away from manholes—safer tandem towing.

All Controls at Working End—keeps operator out of passing traffic—allows full vision of work.

Built-in Gear Reduction Ratio—allows better use of engine for pulling power and bucket travel speed.

Fully Automatic Safety Clutch—instant acting—avoids damage to tiles and machines.

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Hammond, Indiana

SEND FOR LITERATURE

Champion Corporation, 4716 Sheffield Ave., Hammond, Indiana
Please send information on new OK Champion Power Sewer Cleaners.

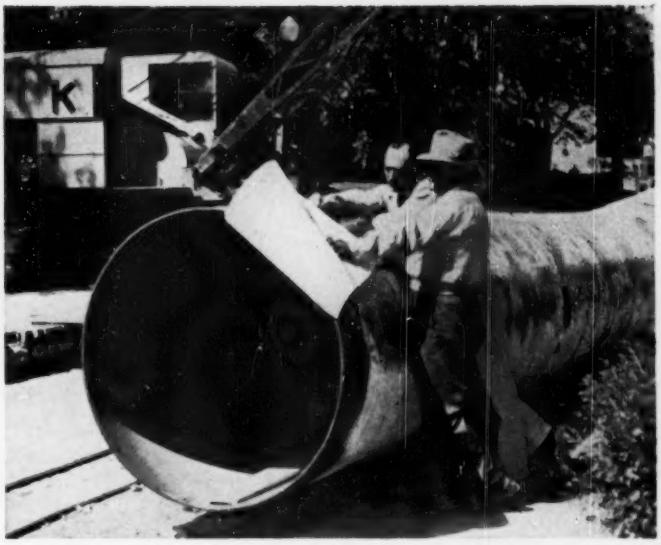
Name.....Title.....

Address.....

You should enjoy the luxury of this five-million-dollar vacation paradise . . . hundreds of gorgeous acres and palm trees—on the ocean between Ormond and Daytona Beach.

Golf, tennis, fishing and ocean bathing at your door. Every convenience for children . . . nurseries, playgrounds. Near gay entertainment . . . unsurpassed sightseeing, amusements, recreation. Fully equipped apartment-villa with living-dining room, separate bedroom, tiled bath, electric kitchen—a Shangri-La for your entire family—only $49.50 weekly. Two and three bedroom villas slightly higher. Florida is superb right now—write for folder, rate sheets and any special information.

Laying Steel Water Pipe in Cleveland



Sam J. Kassouf and Edward J. Kassouf, of The Kassouf Company, discuss one of the blueprints for the 5700-ft Section A of the Belvoir Boulevard water main. The pipe shown has a diameter of 48 in.

By way of augmenting its water-distribution system, the City of Cleveland recently embarked on a vigorous expansion program which included the construction of three water towers, two auxiliary pumping stations and a system of new water mains. Construction of one of the new mains is shown in the accompanying photographs. The pictures were taken on Section A of the Belvoir Boulevard line, for which Bethlehem furnished 5700 ft of 48 in. tar-enameled steel pipe. The contractor was The Kassouf Company, Cleveland.

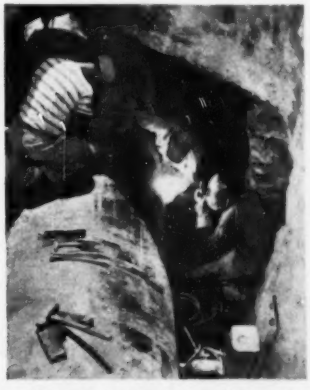
Bethlehem Tar-Enameled Water Pipe is meeting the requirements of more and more water-works engineers because it is leak-proof and easy to install, and maintains high flow coefficients. This pipe is so strong, yet resilient, that it effectively resists the effects of soil movement after installation. Besides, it is impervious to incrustation and corrosion because it is adequately coated with a uniformly smooth layer of coal-tar enamel.

Bethlehem Tar-Enameled Water Pipe can be installed in all types of terrain. When obstructions are encountered, it's a simple matter to make offsets in the field, by means of flame cutting and welding. Water-tight girth seams can be made by three methods—by welding, riveting, or with mechanical couplings.

Bethlehem Tar-Enameled Water Pipe comes in 40-ft lengths, and in all diameters from 22 in. i.d. up to the maximum permitted by common carriers.

Drop a line to the nearest Bethlehem sales office, and one of our representatives will call with additional details.

Fabricated into bend, this special length of Bethlehem Water Pipe is shown as it goes into trench. Bethlehem Water Pipe is easy to handle.



Welder joins curved section to straight length of Bethlehem Water Pipe, at the same time making a sound water-tight seam, to prevent leakage.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

★ BETHLEHEM STEEL ★

BETHLEHEM *Tar-Enameled* WATER PIPE

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THE QUALITY SIGN LINE

Miro-Flex signs conform to standards of the U. S. Public Roads Administration. Available either plain or reflectorized with plastic or glass buttons or reflecting background. They are uniformly embossed on zinc-coated, Bonderized steel and finished in magnetically sprayed baked enamel. Tests prove this process insures longer life and resists rust under extreme conditions. For signs of quality, choose Miro-Flex. Special signs available on request. For illustrated catalogue write...

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WILKINSON LINE LOCATOR

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QUICK FAST EXACT

It's FAST, EXACT, SIMPLE.

Avoid expensive damage to subsurface structures by power trenching machines with the Wilkinson Line Locator, the electronic sleuth.

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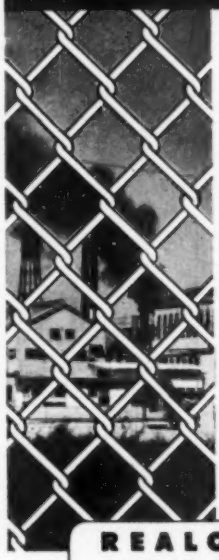

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Positive protection for your grounds and property is assured with Realock Fence. In addition, all fittings, hinges and locking devices have bolts on the inside, secure from outside tampering.

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For additional information write our nearest sales office or consult your classified telephone directory.

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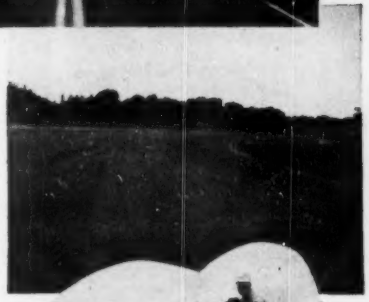
are long life roads . . .

THE best testimonial to Adnun design is the excellent condition of the miles of Adnun laid roads that have carried 15 to 16 years of heavy traffic. The oldest machine laid roads in the world are Adnun Roads. Look at the heavily traveled highway above—a part of the Hamilton-Brantford road in Ontario, one of Canada's main arteries—laid in 1936. The one below—Colorado Blvd.—one of Denver's well known streets laid in 1935. And the bottom picture—part of the Indianapolis Speedway laid in 1936.



These are but a few of many photographs in our files that show prominent traffic arteries in city, state and county systems. These are roadways that bear heavy traffic counts: Streets that take the beating of trucking and speed under a full range of weather conditions. Note the eveness of wear *clear across,* the few signs of patching, the freedom from breakdown.

The Adnun principle of continuous Course Correction assures surface smoothness and a uniformity of course thickness that no other paver can equal. The Oscillating Cutter Bar action cuts the material off at the proper level and does not tear it. Material is carried up to the parallel course and is compacted in place, making a tight joint, a joint that will not throw a car off its course. *The Adnun builds longer life roads and safer roads.*

You will be interested in the booklet, "11 Basic Things." It will give you some new thinking on black top paving equipment. Send for it.

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Subsidiary of Blaw-Knox Co.
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TRADE MARK REGISTERED

BLACK TOP PAVER

"Million Dollar Gate" and then some!

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Installation is expedited because interchangeable couplings don't have to be match-marked. In fact, the entire mechanism is made so that repair and replacement parts fit into place precisely, with no "file-and-fit" needed on the job.

And Chapman Standard Sluice Gates can be specified with the type of operating control best suited to the job . . . manual, hydraulic cylinder, or motor-operated floorstands. Get the full facts from Chapman's Standard Sluice Gate Bulletin 25 . . . send for your copy now.

The Chapman Valve Mfg. Co., Indian Orchard, Mass.

Chapman *Standard* Sluice Gates

We Engineered the Mechanical Advantages Of Big Shovels into the Dempster-Diggster

The Dempster-Diggster's ability to dig hard and stratified materials without shooting is shown in photo at right. Note ample loading clearance. Dempster-Diggster, shown at work in Florence, Ala., is the Type GRD, Model 100.

This Dempster-Diggster, shown at work in Croighton, Pa., is also loading hard and stratified material without shooting. It is the Type CR, Model 100.

The Type GRD, Model 100-HL is shown above loading Hopper Bottom car, height of which is 10'8" from rail to top of car.

Simultaneous Independent Hydraulic Crowding and Hoisting, Variable Crowd Action at Any Dipper Position and Changeable Buckets are engineered into the Dempster-Diggster. Many of the present Dempster-Diggster owners were at one time in the same position you may be in today. They needed front end loaders, but they also needed shovels that could dig out 15 to 18 foot banks. The versatility of the Dempster-Diggster, plus its economical and efficient operation, left them with only one choice. In the first place, the Dempster-Diggster can do anything a conventional front end loader can do—and do it faster and at less cost! Second, on big jobs the Dempster-Diggster is without equal for working in tight places. The Dempster-Diggster is available in either of two types of traction—pneumatic (Type GRD) or crawler (Type CR). Both types are supplied in two models—the Standard (Model 100) or High Lift (Model 100-HL). Our new catalog No. 1032, with over 35 illustrations and complete specifications, shows how this revolutionary shovel can cut your costs tremendously. For your copy fill in the attached coupon and mail today!

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Please send me, without obligation, your Dempster-Diggster Catalog #1032.

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THE *Dualtronic* COMBINATION
PIPE & LEAK DETECTOR

The "Dualtronic" is acclaimed by Municipalities and Utilities throughout the world, because of the time and labor savings effected by one instrument doing the work of two so efficiently and effectively. Ruggedly built! Lightweight! One man operation! The "Dualtronic" is the answer how to cut costs 50%!

Lightweight! Rugged!

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Guesswork eliminated. Pinpoint location of pipes, mains, gates, tees, etc. One man operation, total weight 11 lbs.! Strong, positive location signal guaranteed by Licensed circuits and Microtuning, exclusive with Goldak. Lasts a lifetime, guaranteed performance.

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UNITED STATES MOTORS CORP.
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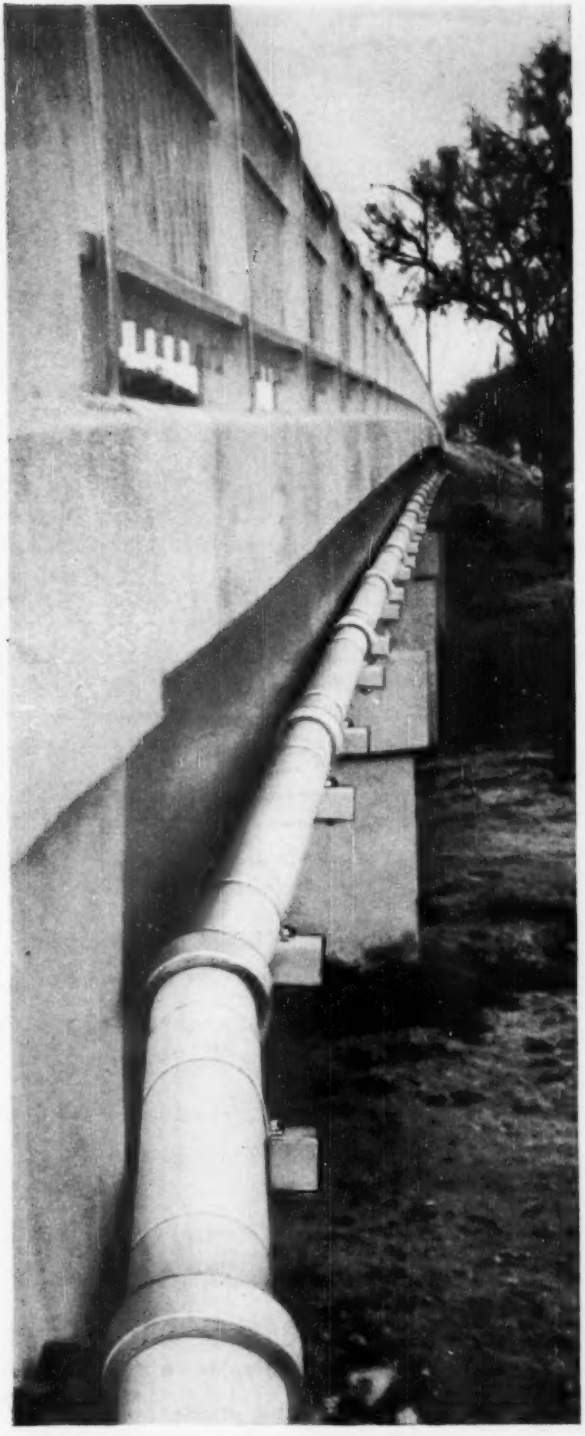

Run of "Century" Asbestos-Cement Pressure Pipe supported on bridge. Note that "Century" Pipe needs no protective painting; external corrosion factors can't affect it.

where permanence counts . . .

"Century"

asbestos-cement pressure pipe!

Strong . . . durable . . . a water main that will successfully resist exposure to the elements without need of protective treatment—that's "Century" Pipe!

Consider the strength factors that this run of "Century" Pipe has in common with the supporting bridge:

"Century" Pipe is made of practically indestructible materials—Portland cement, reinforced with strong, tough asbestos fibers.

Like the bridge, "Century" Pipe has been built with an extra margin of safety to make certain it is *stronger than it will ever need to be.*

And, like the bridge, "Century" Pipe can "take" traffic vibration. The "Century" Simplex Couplings actually cushion both ends of each pipe section in rubber—which helps to absorb the shocks and vibrations of passing traffic.

When, in addition to the strength of "Century" Pipe, you consider the other long life factors—resistance to corrosion, tuberculation, and electrolysis; and the economy—the fact that it can be laid quickly with a minimum of special skills; you'll quickly see why *before you buy or specify any pipe for water mains, it will pay you to investigate "Century" Asbestos-Cement Pressure Pipe.*

WRITE FOR FREE BOOKLET, "Mains Without Maintenance." Contains valuable reference material, specifications, and data for anyone interested in pipe for water mains. FREE—write for it.

Nature made Asbestos . . .
Keasbey & Mattison has made it serve mankind since 1873

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MIGHTY "B" MIDGET

Fastest Pneumatic Concrete Breaker and Backfill Tamper. Replaces all the dirt removed after pipe has been laid. Gives you high density compaction. Ready to repave immediately. No temporary paving. No spoil dirt to haul away. Due to high density compaction, requires little asphalt in replacement. Cuts cost of tamping and breaking of concrete many times. Can be worked manually or automatically. 160' Compressor for full capacity or 105' Compressor for ½ capacity. For further particulars see your nearest dealer, or write Department D.

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Solve your city lawn and maintenance problems—and save time and money too! . . . The powerful 5 hp. Gravely Tractor does 20 jobs faster, better, easier! 20 tools to choose from for your particular needs, all powered by the same rugged, dependable tractor!

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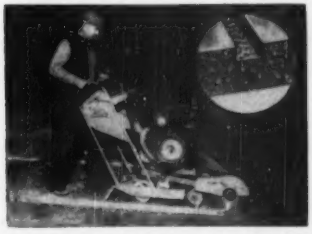
CONSTRUCTION EQUIPMENT NEWS

A Preview of Equipment That Will Help You On the Job

PATCHES—TRENCHES SAWED FOR FLOOR—STREET REPAIR — Saw concrete floors, walks or streets! Saw narrow slit trenches 1" wide for conduit or any width for utility lines. Eliminate jackhammer fractures beyond the straight, smooth sawed lines.—**Write Clipper Mfg. Co., 2813 E. Warwick, Kansas City 8, Mo.**



FLOORS, DRIVES, RUNWAYS EASILY CUT FOR REPAIRS—Rail tunnels, rail and pipe trenches, air lines and machinery bases were cut in dense concrete with a Model C-130 Clipper Concrete Saw and CDS-20 Diamond Blade at the rate of 5' per minute—3" deep. Tremendous savings were claimed by the contractor in removal and replacement.—**Write Clipper Mfg. Co., 2813 E. Warwick, Kansas City 8, Mo.**

TRACK SAW NOW CUTS LARGEST STONE, TRANSITE, TERRA COTTA — By placing C-15 Clipper Concrete Saw on tracks, a Cleveland contractor cut limestone veneer units from 15'x7"x15" quarry lengths. In addition to large, bulky shapes this model is efficient and dustless for inside patch and trench work.—**Write Clipper Mfg. Co., 2813 E. Warwick, Kansas City 8, Mo.**

CONTRACTION JOINTS NOW SAWED—Floors, walks, drives and runways now poured continuously (reduces bulkheading!) Then joints are sawed to eliminate hand forming and costly spalling.—**Clipper Mfg. Co., 2813 E. Warwick, Kansas City 8, Mo.**

STUDIES OF SAWED JOINTS PROVE VIRTUAL ELIMINATION OF SPALLING — Highway transverse joints sawed 2" deep are devoid of spalling after 1½ years in contrast to heavy spalling in a few weeks on formed joints, according to State tests.

Typical spalling after few weeks heavy traffic.

Sawed joints on same highway after 1½ years.

It's Done Easier, Faster, More Economical when you SAW BEFORE BREAKING with

CLIPPER CONCRETE SAWS

CONCRETE EVIDENCE

Ever watch a Clipper Concrete Saw in action?... If not you've missed something... for the downright SPEED, EASE and SMOOTHNESS of operation is really something to see!

You'll recognize that Clipper Concrete Saws are designed for SIMPLE, FOOLPROOF DUSTLESS performance. Dashboard controls — perfect balance — floating three point blade suspension* — and "job-rated" power plants...all combined for concrete and asphalt cutting far beyond anyones expectations.

*A pivoting front axle keeps the blade straight in the cut even on rough surfaces — stops binding — stops excessive blade costs.

MODEL C130 Power-Packed

Experience Proves A Concrete Saw Must Have These Clipper Features

FREE TRIAL...

The outstanding policy of FREE TRIAL has been in effect since Clipper invented the World's First Masonry Saw many years ago! Clipper Concrete Saws are GUARANTEED to: Provide—regardless of hardness ...the Fastest Cut... at the Lowest Cost ...with the Greatest Ease. Anytime... Anywhere! You be the judge ... TRY A CLIPPER ON FREE TRIAL!

Clipper

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"COAST-TO-COAST"

Serving the World as the World's Largest Manufacturer of Masonry Saws

CLIPPER DIAMOND BLADES

• A complete selection of blade types for every sawing job... SAW asphalt or concrete floors, or SAW contraction joints in fresh poured slabs.

CLIPPER MANUFACTURING CO.
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Send FREE Literature, Information and Prices on the NEW CLIPPER CONCRETE SAWS 8C

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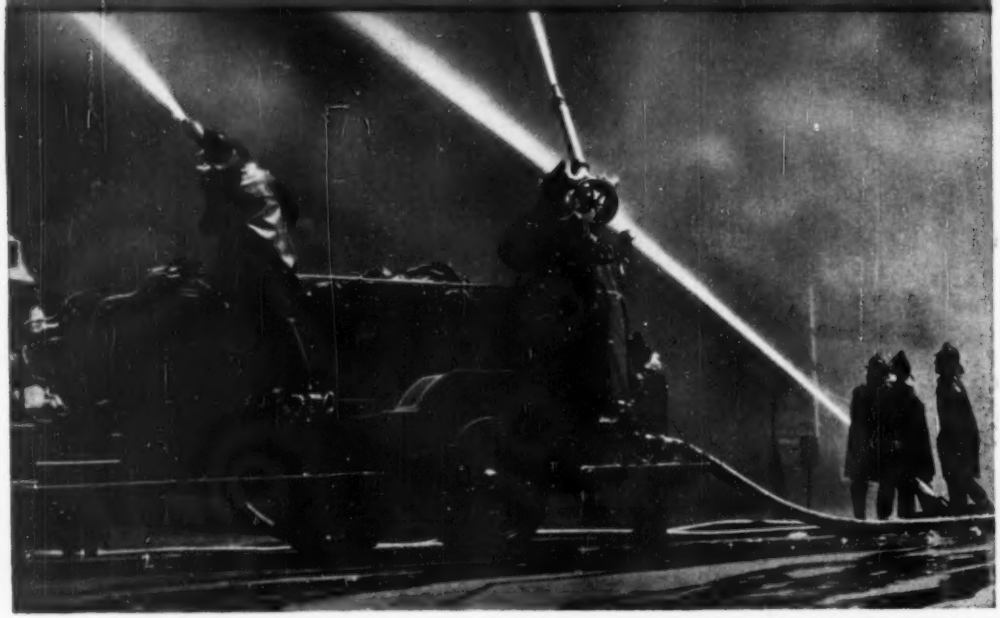
SOLD ONLY DIRECT FROM FACTORY

when water pressure means the most



City officials, municipal and industrial engineers shoulder a tremendous responsibility in the maintenance of water pipe lines. They know that pressure failure due to leakage or tuberculation can often have disastrous results. Today, the neglect of water lines—however old—is uneconomic. The Centriline process of centrifugally applying cement-mortar lining to pipe lines *in place* virtually makes new pipes out of old at a fraction of the cost. Centrilining, not only prevents tuberculation and leakage, but totally eliminates corrosion to the inner walls. Pumping costs are lower, maintenance reduced and the saving over new pipe lines often amounts to many thousands of dollars. Write today for your free copy of our new bulletin describing the Centriline process.

CEMENT-MORTAR LININGS **FOR PIPES IN POSITION**

CENTRILINE CORPORATION

A subsidiary of Raymond Concrete Pile Co.

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Branch Offices in Principal Cities of United States and Latin America

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"Mighty Midget"

...truly dependable traffic control

right in the palm of your hand!

EVERY ADLAKE RELAY GIVES YOU THESE "PLUS" FEATURES:

hermetically sealed
(dust, dirt, moisture, oxidation and temperature changes can't interfere with operation)

silent and chatterless

requires no maintenance

absolutely safe

In traffic control, dependability is the watchword—and ADLAKE's maintenance-free "Mighty Midget" assures dependability under all operating conditions.

Although small enough to fit into one hand, the No. 1140 Relay makes or breaks 30 amps. easily, with low operating current. Its mercury-to-mercury contact prevents burning, pitting and sticking, and it is hermetically sealed and cushioned against impact and vibration.

Modernization of old traffic control equipment is easy and economical with ADLAKE Relays, and ADLAKE engineers are always ready to work with you on your particular problems. For full information, just drop a card to The Adams & Westlake Company, 1125 N. Michigan, Elkhart, Indiana. No obligation, of course.

THE
Adams & Westlake
COMPANY

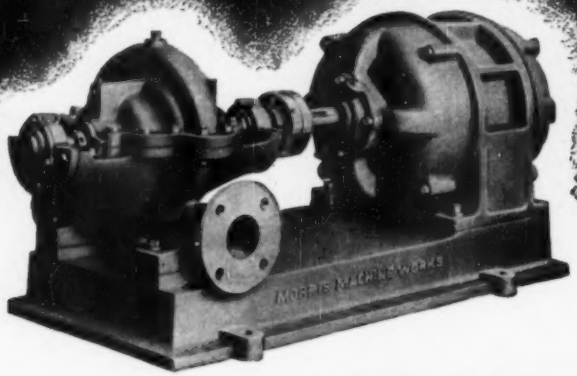
Established 1857 ELKHART, INDIANA New York, Chicago

Manufacturers of ADLAKE Hermetically Sealed Relays

Adlake TRADE MARK

FLOATING SEALING RINGS...

Permit
Closer Running
Clearances...



MORRIS
Horizontally Split Double-Suction WATER PUMP

No other pump has the Floating Sealing Rings . . . yet this exclusive feature alone makes the Morris Double-Suction Water Pump outstanding for efficiency and long service.

During the instant that the pump comes up to speed, but before full pressure is built up, the Morris Floating Sealing Rings adjust themselves to a uniformly close running clearance around the impeller. As soon as full speed is developed the internal hydraulic pressure acting upon the vertical face of the floating ring presses it tightly against the precision machined surface of the casing ring where it is firmly held in place.

This action permits machining the Rings to closer clearances. Leakage is consequently reduced to a minimum, initial efficiency maintained for much longer periods of service. Assures concentricity of ring with impeller, and eliminates binding due to abnormal operating conditions.

Other Long-Service Features of the Morris...

- **Heavy duty, precision-made ball bearings mounted in dust and moisture-proof housings.**
- **Extra-heavy shaft of tough, hard alloy steel . . . exceptionally large in diameter . . . to prevent destructive whipping.**
- **Casing is horizontally split. Upper part easily removed for inspection and servicing without disturbing suction and discharge piping.**

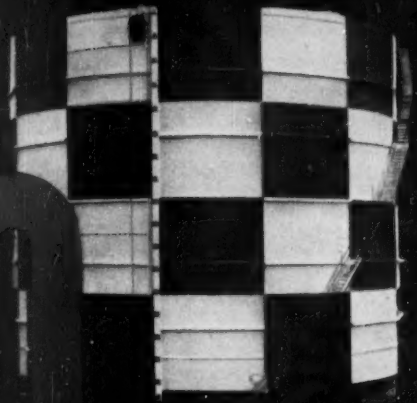
Advanced design of Morris Double-Suction Water Pumps and their several exclusive features assure increased hydraulic and mechanical efficiency . . . reliability . . . and low maintenance cost. Write today for free Bulletin 179.

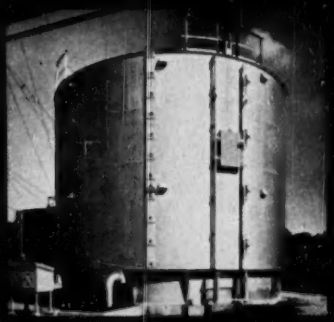
MORRIS *Centrifugal Pumps*

MORRIS MACHINE WORKS, Baldwinsville, N.Y.

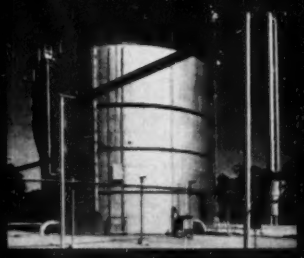
Sales Offices in Principal Cities

50 Wiggins Gasholder installations in the 3 years since introduction!

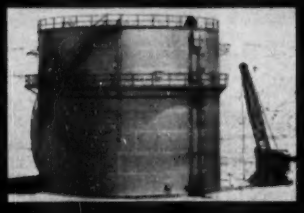




no doubt about it . . . simplified Wiggins design is a better way to store industrial and chemical process gases



it's the **only** gasholder that uses NO **WATER TAR GREASE**



it's the **only** gasholder with **AN ABSOLUTELY DRY, FRICTIONLESS SEAL**

Converted from old style

it's the **only** gasholder that assures NO **WEATHER WORRIES OPERATING COSTS MAINTENANCE PROBLEMS**

Operates at pressures up to 20" of water. Gas tightness and impermeability of Wiggins dry seal proved in 15 years' service under actual operating conditions. Ask about converting your present gasholders to Wiggins principle.

WRITE FOR NEW BULLETIN WG-22

REFER TO BUILDER'S COMMITTEE REPORT (1951) AMERICAN GAS ASSOCIATION

WIGGINS VAPOR SEALS GENERAL AMERICAN TRADE MARK

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Transportation Corporation

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Branch Offices: Buffalo • Cleveland • Dallas • Houston • Los Angeles • New York • Pittsburgh • St. Louis • Tulsa • Washington • Export Office: New York • Plants: Birmingham, Ala.; Lyon

VERSATILE...

is the word for the Dorrco Vacuator*

Here are Three Ways it can be utilized to solve your problems...

AS A PRE-TREATMENT UNIT

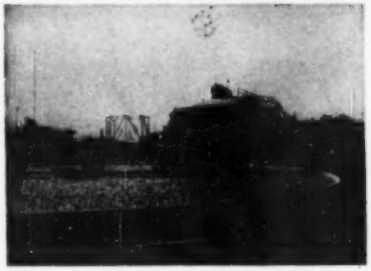
1 At overflow rates of 5000 to 7500 gal./sq. ft./24 hrs., the Vacuator can serve as a complete pre-treatment unit, removing scum, grit and a substantial percentage of suspended solids—also thickening excess secondary sludges.

EXAMPLE:

At McAlester, Oklahoma's new West Sewage Treatment Plant a 12' dia. Vacuator removes scum, grease and grit from incoming screened sewage, prior to two-stage trickling filter treatment. Operating results show removals of 46.6% of suspended solids and a 28.4% reduction in B.O.D.

AS A SCUM-REMOVAL UNIT

2 At overflow rates of 5000 gal./sq. ft./24 hrs., the Vacuator can be used for the treatment of oil, cannery, packing house, laundry and similar tough-to-handle wastes.

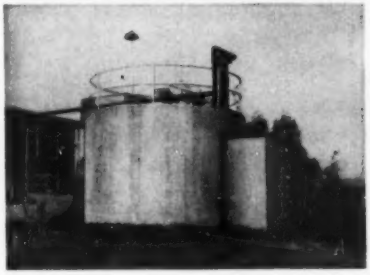


EXAMPLE:

Scum-forming cannery wastes virtually put the Palo Alto, California Sewage Treatment Plant out of commission five months of the year. A 35' dia. Vacuator, followed by secondary treatment, completely solved the problem by removing an average of 43.6% of suspended solids, 58% of settleable solids and 8.4% of B.O.D. during the canning season.

AS A GREASE-REMOVAL UNIT

3 Overflow rates as high as 10,000 gal./sq. ft./24 hrs. can be used when the primary function of the Vacuator is grease removal from domestic or industrial wastes.



EXAMPLE:

At Patuxent River, Maryland, a 14' dia. Vacuator removes heavy "slug loads" of grease ahead of primary treatment. Removals average 50% of suspended solids and a 51% reduction in B.O.D., enabling the standard Dorr Clarifier which follows to function smoothly without auxiliary equipment.

These examples illustrate but three of the many ways in which the compact, three-product Vacuator is successfully solving difficult problems. If you think vacuum-flotation could help you, write for Bulletin #6301.

*Reg. U.S. Pat. Off.

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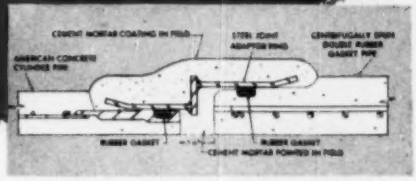
Wherever Pressure Conditions Permit··
Different Classes of American Reinforced Concrete Pressure Pipe Can Be Combined in the Same Water Transmission Line


CEMENT MORTAR COATING IN FIELD
STEEL JOINT ADAPTER RING
CENTRIFUGALLY SPUN DOUBLE RUBBER GASKET PIPE
AMERICAN CONCRETE CYLINDER PIPE
RUBBER GASKET
RUBBER GASKET
CEMENT MORTAR POINTED IN FIELD

Here's a typical example of the ability of American to meet specific project requirements... to give you a carefully laid out and engineered pipe line. You'll like the simplified planning and ease of installation this feature gives you.

By designing your pipe line to meet such specific project requirements you will achieve...

Greater Economy in Cost!

You know that reinforced concrete pressure pipe gives you the strength of steel and the permanence of concrete... with reductions in initial cost, lower installation costs, sustained capacity, and trouble-free service. Four classes of reinforced concrete pressure pipe are available to meet varying requirements.

So why not use the proper combination of these classes of pipe, where pressure ranges differ, to meet the needs not only of high pressure service but the needs of intermediate and low pressure service as well?

You'll find it the most economical way to plan a major capital investment...

...with Greater Savings in Critical Materials!

The conservative design principles of reinforced concrete pressure pipe are such that economical use may be made of steel and concrete to meet design requirements with appreciable savings in critical materials.

During the present defense emergency, these are valuable savings to make... and, they are savings that ease the problems of procurement, with less drain on the national economy.

So... if you find that the pressure ranges in your line are going to differ widely, give us the opportunity to show you how the combination of different classes of American reinforced concrete pressure pipe can save you money.

How American Concrete Cylinder Pipe Is Joined To American Non-Cylinder Pressure Pipe

A simple adaptor ring provides the transition between the spigot ends of two different classes of pipe.

In all classes of reinforced concrete pressure pipe manufactured by American, the rubber gasket is confined by a joint ring to a definite groove in the spigot end of the pipe, thus assuring the most positive and safest use of the gasket as a water seal under all normal operating conditions.

Recent Typical Installations Where This Feature Is Being Used to Obtain REDUCTIONS IN THE COST OF DELIVERED WATER

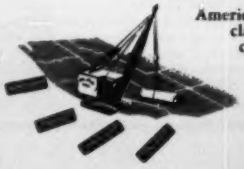
San Dieguito Irrigation District, Encinitas, California

City of Whittier, California

City of Pasadena, California

Pomona Valley Municipal Water District (now being installed) Pomona, California

Four Plants to Serve You



American manufactures four classes of reinforced concrete pressure pipe in diameters ranging from 12 in. to 12 ft., and for all pressures related to to modern American waterworks practice.

American PIPE AND CONSTRUCTION CO.

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MAIN OFFICES AND PLANT—4635 FIRESTONE BOULEVARD, SOUTH GATE, CALIFORNIA
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This light-duty model pays off in all seasons

The popular LD licks a lot of snow and ice, too! A *true* 4x4... it safely handles jobs that roll up excessive repair costs for ordinary vehicles.

When the rains come and the going is soft, the LD can travel while other trucks must stay at home. Its g.v.w. is 14,500 lbs.

Pays out on smooth highway, too! For general hauling or patrol work, the LD is a growing, economical favorite.

Many snowfalls and icy conditions are easily brought under control by this *light-duty* LD. The center differential of the LD eliminates stresses. That, plus other reasons, is why the LD works on assignments that often shove conversions and conventional trucks into the repair shop. Proof, too, of the LD's superiority in all seasons on a great work range. Ask FWD or your FWD distributor for facts. The FOUR WHEEL DRIVE AUTO CO., Clintonville, Wis. *Canadian factory*, Kitchener, Ontario.

Built by the Makers of America's Foremost Heavy-Duty Truck

You buy more than a truck When you buy an FWD

***Extra-traction* and *proper distribution* of weight and power give you the following:**

- **Ability to work more days per year**
- **Ability to handle more jobs**
- **Ability to travel easily and safely on or off the highway**
- **Ability to haul legal loads economically**
- **Lower maintenance costs (up to twice the front tire life, for example)**
- **Up to twice the truck life**

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"for every job on your water front"

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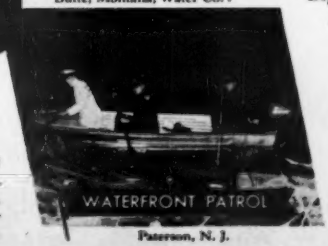
Tennessee River, T.V.A. operation

Butte, Montana, Water Co.



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BIG TWIN... 25 O.B.C. certified brake horsepower at 4000 R.P.M. Gearshift with Neutral, Forward, Reverse — Roto-Matic Control — separate, large capacity fuel tank.

WHERE THERE'S WATER there's work to be done... and boats to be powered for varied purposes. Outboard power... *Evinrude* power... offers many important advantages over complicated and costly installations of inboard engines. For more than four decades these advantages have been amply demonstrated in the service of municipalities from coast to coast.

With Evinrudes your budget—and crew efficiency—benefits in many ways: (1) Moderate initial cost. (2) No expensive installation costs, no "extras." (3) Complete portability—motors are instantly attachable, easily transferred from hull to hull. (4) No sacrifice of passenger, cargo or equipment space. (5) Simple to operate and service. (6) Safe operation in shallowest waters.

For largest work boats and fast patrol craft the "Big Twin" (illustrated at left) is an exceptionally satisfactory power plant, developing 25 B.H.P. in continuous heavy-duty service. Gearshift with Neutral-Forward-Reverse gives full maneuverability, and separate Cruis-a-Day Tank provides long-range fuel supply. For literature on this and other Evinrude models, write

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METAL POST STRAIGHTENER

Saves valuable man-hours by efficiently and quickly straightening metal posts. Used extensively by states, cities, counties and towns for straightening parking meter posts, highway signs and metal fence posts of all kinds. Pays for itself over and over again!

Powered by a 5-ton hydraulic jack with all the necessary attachments for a quick efficient set-up. Simple, safe and easy to operate! Fully portable . . . entire unit weighs only 30½ lbs.

See your supplier or write direct for prices and further information.

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Baltimore, Maryland has cast iron water and gas mains in service that were installed more than a century ago. In addition, there are more than 28 other cast iron water or gas mains with known records of continuous service for more than 100 years in the older cities of the United States and Canada. Such service records prove that cast iron pipe not only resists corrosion effectively, but is endowed with all the strength factors that pipe laid under city streets must have to meet the stresses imposed by modern conditions of traffic and underground services.

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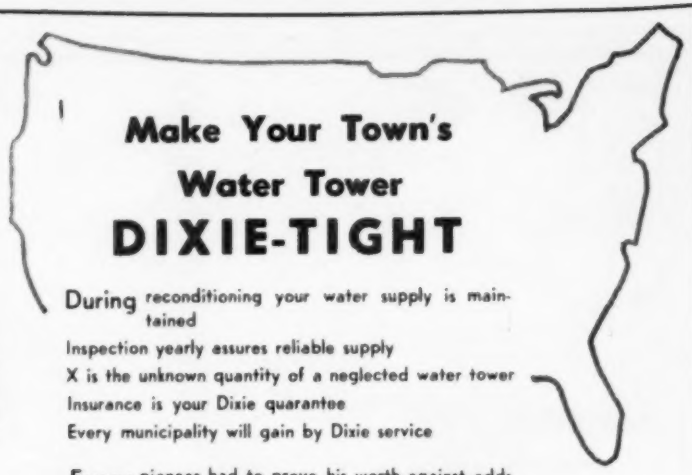

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X is the unknown quantity of a neglected water tower

Insurance is your Dixie guarantee

Every municipality will gain by Dixie service

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to meet any emergency of street and highway repairs and maintenance"

—says Louis H. Dillenburg, highway commissioner, Shawano Co. Highway Dept., Shawano, Wisconsin.

★ Heil reinforced body can't sag!

★ Heil hoist and pump assure fast dumping!

★ Heil design saves weight — permits bigger loads!

Many an official agrees that Heil Bodies and Hoists pay out in public service. Fifty years of experience equip Heil to build dump units that stay on the job with less maintenance and repair expense.

There's a Heil unit that meets *your* requirements. Heil hoists fit any truck chassis. Hoisting capacities range from 8,000 to 90,000 pounds. Heil bodies are available in all popular sizes.

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Damage by ice and wind often can be avoided, or the effects lessened by use of correctly designed pruning tools, bracing materials and tree wound dressing.

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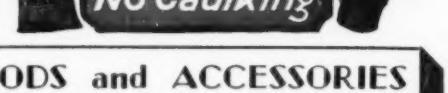

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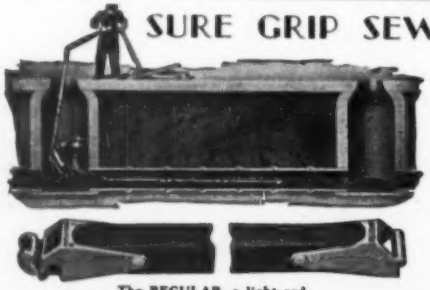
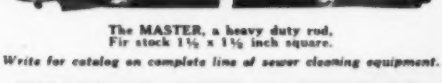


The REGULAR, a light rod.
Fir stock 1⅛ x 1⅛ inch square.

are joined together with a dual lock forming a rigid chain that will float. They can be coupled or uncoupled upon the street if desired. Made in two sizes.



The MASTER, a heavy duty rod.
Fir stock 1½ x 1½ inch square.

Write for catalog on complete line of sewer cleaning equipment.

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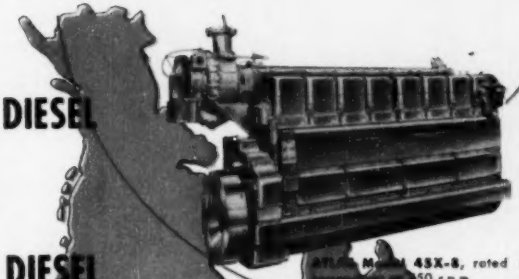
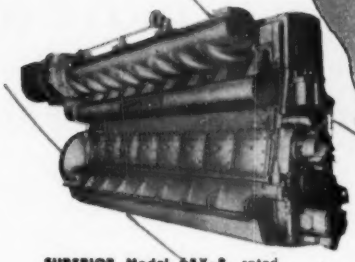
SUPERIOR and ATLAS DIESEL SERVICE

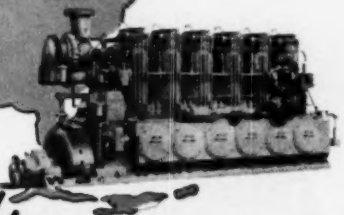


ATLAS Model 43X-8, rated 600 horsepower at 750 r.p.m.

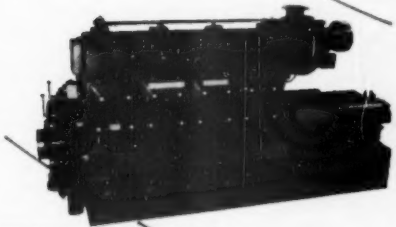


SUPERIOR Model 63X-8, rated 1500 horsepower at 600 r.p.m.

Everywhere in North America



ATLAS Model 75X-6, rated 600 horsepower at 325 r.p.m.



SUPERIOR Model 40X-8, rated 540 horsepower at 750 r.p.m., 650 horsepower at 900 r.p.m.

From Ketchikan to New Orleans to Halifax—everywhere you need diesel power or diesel service you can depend on Superior and Atlas facilities.

The consolidation of research, engineering, and manufacturing operations at Springfield, Ohio, resulted in the establishment of an extensive network of Atlas and Superior sales and service points within reach of every diesel user.

At each location you'll find:

- ★ Adequate stocks of replacement parts and operating supplies.
- ★ Skilled service personnel.
- ★ Engineers with broad experience in diesel application.

Whether you're using diesels for marine, industrial, power generation, or any other type of service, a call on the nearby Superior and Atlas Representatives is sure to pay off.

If you haven't received the latest bulletins on Atlas and Superior 4-Cycle Diesels be sure to write for details on the types and sizes you use or expect to purchase.

Superior ENGINES — ATLAS Imperial DIESEL ENGINES

DIESEL • DUAL FUEL • GAS

ENGINE DIVISION

THE NATIONAL SUPPLY COMPANY

PLANT AND GENERAL OFFICES:

SPRINGFIELD, OHIO

SALES AND SERVICE POINTS:

Gloucester, Massachusetts
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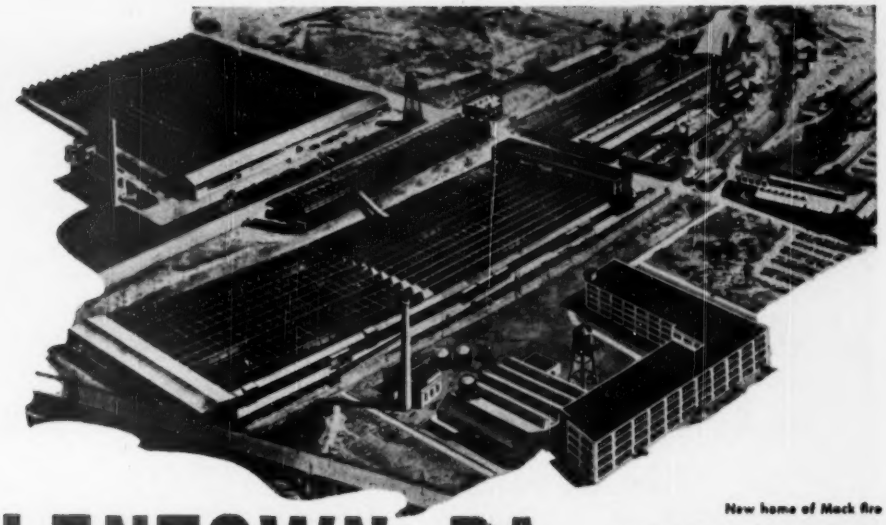
Park Rapids, Minnesota
New York • Seattle • New Orleans

the better to serve you

MACK FIRE APPARATUS

will move to
larger quarters at

TRIPLE COMBINATION PUMPERS - 500 TO 1500



ALLENTOWN, PA.

New home of Mack fire apparatus, centralized in Allentown, Pa. —part of the greatest research, engineering, manufacturing and service facilities in the fire apparatus field.

Sharply growing demand for Mack fire apparatus has increasingly overtaxed our present production facilities at Long Island City. Particularly since the introduction of our popular aerial ladder, we've just about been bursting at the seams. So that we may continue to serve your needs dependably and efficiently, larger quarters have become imperative.

This problem has been solved . . . by setting up a separate and streamlined production line at Allentown, Pa., a short distance from the main Mack plants. Incorporating the most modern manufacturing and testing equipment manned by seasoned Mack personnel, these capacious new facilities will enable us to serve you even better than before.

In a few months, Mack pumpers, ladder trucks, hose and squad cars will be rolling off this line. Meanwhile, production on present orders will be maintained without let-up at Long Island City.

Our investment in this improvement is an investment in the faith in Mack apparatus that has led to their use by more than 1,000 American communities. It means a renewal and a strengthening of the traditional Mack pledge to the fire service—of our continued devotion to the highest standards of apparatus design, manufacture and maintenance. More than ever, "Built like a Mack" will signify *performance that tops them all.*

modernize with

MACK MANUFACTURING CORPORATION
FIRE APPARATUS DIVISION
Allentown, Penna.

Factory branches and distributors for service and parts in all principal cities. In Canada: Mack Trucks of Canada, Ltd.

Mack
FIRE APPARATUS

GPM • SQUAD AND HOSE CARS • AERIAL, CITY SERVICE AND QUADRUPLE COMBINATION LADDER TRUCKS

East Chestnut Street, built in 1949

Poplar Street, built in 1950

In Enid, Oklahoma, the "people's choice" in pavements is *CONCRETE*

Monroe Street, built in 1[illegible]

South Wallace Drive, built in 1949

Rush Street, built in 1950

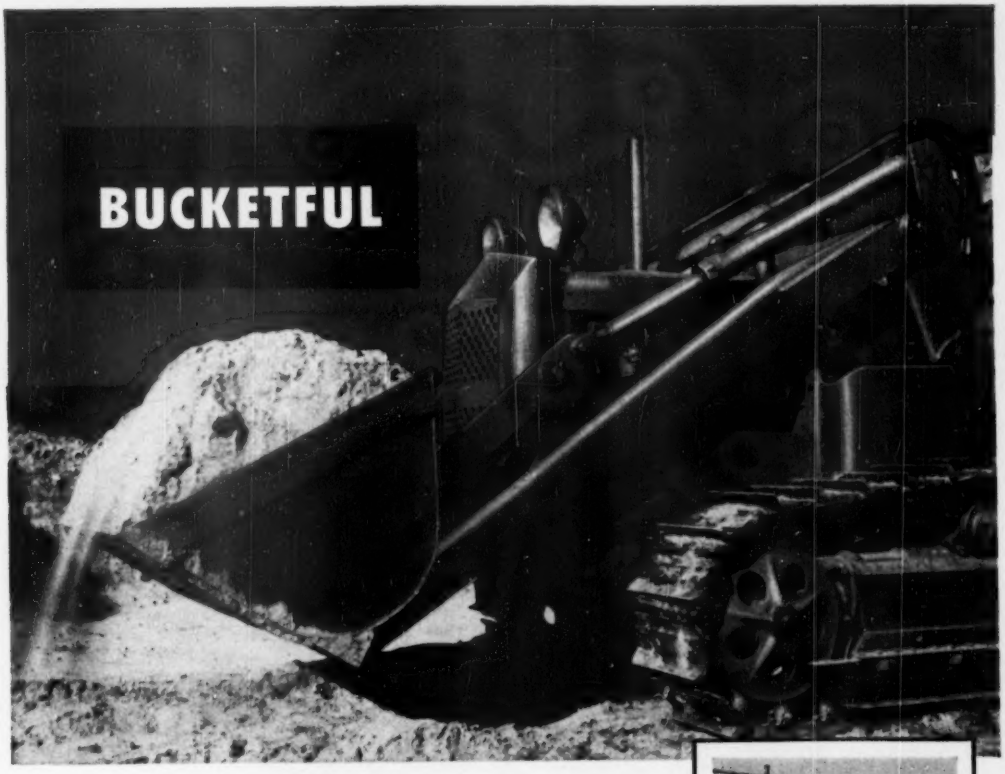
Under the Oklahoma State Paving Law property owners have the right to request the type of pavement they prefer by filing a petition with the city clerk. If 51 per cent or more of the property owners in a paving district petition for a specific pavement, it becomes mandatory for the city to specify that type of pavement.

In the two years, 1949 and 1950, the city of Enid, Oklahoma, awarded contracts for 224,494 sq. yd. of concrete streets. This constituted the total amount of awards for new pavement during this two-year period. In every paving district where a majority of property owners expressed a preference the choice was concrete.

The overwhelming preference for concrete among property owners in Enid is echoed and re-echoed by motorists, taxpayers and city officials from coast to coast. Concrete is moderate in first cost, yet can be designed accurately for any axle load—and will *keep* its load-carrying capacity throughout its long service life. It costs much less to maintain and it lasts longer. The result is true **low-annual-cost** pavement that pleases property owners, city officials and motorists alike.

For more information about the designing and building durable, **low-annual-cost** pavements, write for free booklet, *"Design of Concrete Pavements for Municipal Streets."* It is distributed only in the United States and Canada.

PORTLAND CEMENT ASSOCIATION
Dept. 2-4, 33 W. Grand Ave., Chicago 10, Ill.
A national organization to improve and extend the uses of portland cement and concrete... through scientific research and engineering field work



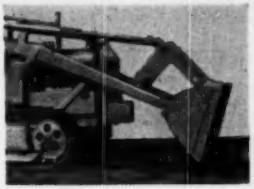
# of Cost-Cutting Features

When it comes to cutting loading costs... stepping up profits, the Oliver Model "B" Crawler and Ware Loader is "loaded" with *plus* features.

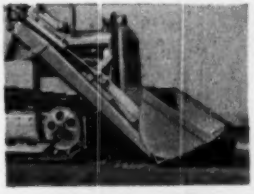
Take the hydraulically controlled bucket, for example. 110° bucket rotation and 28° "tilt back" give you a full bucket every time. "Breaking out" action is 3 times the lifting effort of the loader... a particularly important advantage when loading out hard-packed material or for stripping operations. Bucket level is automatically maintained when lifting load, preventing wasteful spillage. You can control speed of discharge... fast or slow, easily and gently. And, even with the "tilt back" action, you still have a 32° (from vertical) dump angle... a control range no other loader can match. You get bigger loads... *faster!*

The Oliver-Ware "B" loader was designed and built exclusively for Oliver Model "B" tractors. Its ideal fit with the tractor eliminates unneeded dead weight and assures maximum stability for the entire unit. The Oliver semi-rigid axle allows limited oscillation of the track, eliminating the possibility of track-frame distortion. A hydraulic shock absorber smooths out pressure surges... prevents damage to loader and tractor parts.

For complete information on how the Oliver-Ware Model "B" tractor loader can cut costs for you, see or write your Oliver Industrial Distributor.



Plenty of power, plus the wide angle of bucket rotation, assures faster, more positive digging. 28° "roll back" assures maximum break-out action for a full bucket every time.

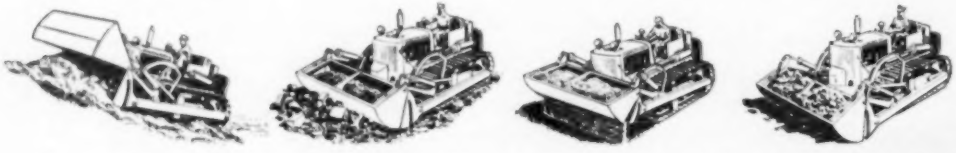


THE OLIVER CORPORATION

Industrial Division: 19300 Euclid Avenue, Cleveland 17, Ohio

A complete line of industrial wheel and crawler tractors

DAILY BEAUTY TREATMENT. This 7-acre Michigan City landfill will be 7 to 9 feet deep, including a 2-foot cover of sand. Every night the Bulldam covers the day's compacted refuse with a fresh sand layer, so the material lies in cells which reduce gas formation and guard against later settling.



Prepares the site | Crushes and compacts refuse | Transports and spreads earth cover | Grades and levels finished area

Factory Sites from City Dump

How Michigan City, Indiana "cleans up" in more ways than one with a Drott Bullclam on an International crawler

Michigan City, Indiana, is making an asset out of two liabilities.

Michigan City builds fine factory sites out of everyday garbage and wet, worthless marshland. And it's done the smart way—with a Drott Bullclam on an International crawler—the *ONLY* one-man unit specially designed to do all four steps of the complete sanitary-fill job.

This fast-working equipment scoops out the excavation. It spreads and compacts the refuse—crushing, smashing, grinding it flat beneath the specially-curved Bullclam front. Then it carries the cover dirt and spreads it in place. Finally it grades and smooths the finished fill.

When you put this one-man sanitation squad to work, you do away with open dumps and smelly burners—you cut your city's disposal costs—you raise land values. Ask your International Industrial Distributor for details. Or write today to:

Drott Manufacturing Corporation, Milwaukee 8, Wisconsin

International Harvester Company, Chicago 1, Illinois

BULLCLAM BY

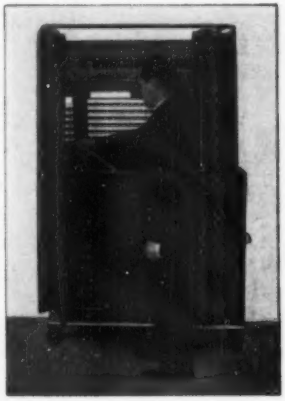
DROTT

POWER BY

INTERNATIONAL

POWER THAT PAYS

7 Reasons Why More Than 5,500 Cities, Towns and Villages in the United States Use AUTOMATC VOTING MACHINES



- Voting is easier and quicker
- Secrecy is assured the voter
- There are no spoiled ballots
- The count is mechanically accurate
- The results are immediately known
- There is a permanent record
- Election expenses are reduced

If your community is still using the old-fashioned paper ballot, investigate the possibility of installing automatic voting machines before your next election.

AUTOMATIC VOTING MACHINE CORPORATION

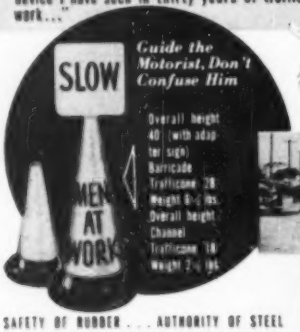
Jamestown, New York

Since 1898

Trafficone SYSTEM of TRAFFIC CONTROL LEADS the NATION in *Economy Efficiency and Safety*

say top traffic experts

"The Trafficone is the best engineered safety device I have seen in thirty years of traffic work..."


SLOW
MEN AT WORK
Guide the Motorist, Don't Confuse Him
Overall height 40" (with adaptor sign)
Barricade Trafficone 28" Weight 8-½ lbs.
Overall height Channel Trafficone 18" Weight 2-¼ lbs.

SAFETY OF RUBBER . . . AUTHORITY OF STEEL

Trafficones are rapidly replacing old fashioned hazardous wooden and metal barricades and expensive flags and wire markers. Dangerous accident conditions to motorists and personal injury problems with workers have been eliminated with this safe, yet effective control.

STORAGE and TRANSPORTATION is SIMPLE with TRAFFICONES. A minimum of space is required for TRAFFICONE storage because of their stacking feature. One truck and one man can now erect barricades and traffic controls over large areas where it used to take two or more, and in 1/10 the time.

INTERSTATE RUBBER PRODUCTS Corporation

908 AVILA, LOS ANGELES, CALIF.

Pat. 2333273

HIGH PRESSURE TANKS

● Whether you want conventional high-pressure units or something special —send us your inquiries. COLE can build you the kind of high-pressure tanks or vessels you require — any size, any shape, any metal. Our experience (of almost a century) in the design and fabrication of metal tanks may be of help to you.

Send us your inquiries for tanks of all kinds. Write for CATALOG—"Tank Talk."

R. D. COLE MFG. CO.

NEWNAN GA

IN 1952 For the 15th Consecutive Year...

The POWER GRADERS That Have Everything!

Controlled Traction
Precision Sideshift
High-Lift Blade
Extreme Blade Reach
Completely Reversible Blade
Full Hydraulic Control

+ the Best Bulldozer in the Business

Thanks to Exclusive All-Wheel Drive and All-Wheel Steer

AUSTIN-WESTERN COMPANY · *Subsidiary of Baldwin-Lima-Hamilton Corporation* · AURORA, ILLINOIS, U.S.A.

Austin-Western

BALDWIN BLH LIMA-HAMILTON

Transite Pipe is a product of modern engineering and research. Shown above is one of the buildings at the Johns-Manville Research Center at Manville, New Jersey.

*Transite is a registered Johns-Manville trade mark

Johns-Manville TRANSITE

TRANSITE PIPE last longer California city streets?

Transite Pipe was first installed by this California city nearly 20 years ago. Its lasting strength and high corrosion resistance have enabled it to outlast pipe previously used several times over.

Research designed it for lasting strength

TODAY, ACROSS THE COUNTRY—under countless city streets like the one shown above—Transite* Pressure Pipe is doing a highly efficient job of transporting water . . . often under conditions so adverse to ordinary pipe that engineers marvel at Transite's ability to stand up through the years!

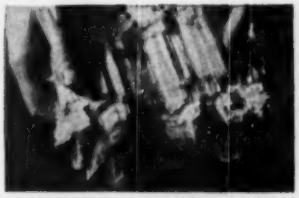
The reason? *Lasting strength!*

Not only does Transite Pipe have the *initial* strength that's needed in a pipe intended for use under busy city streets. Equally important, it has the *lasting* strength that enables it to survive continued corrosive attack, year after year . . . to keep on giving the same dependable, economical service to the community as the day it was installed.

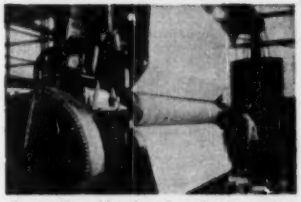
This highly important quality of lasting strength is one of many notable inherent advantages of a pipe engineered with modern water transportation requirements in mind. Transite's Simplex Couplings reduce leakage losses to a minimum, provide flexibility to help relieve the line of soil stresses and traffic loads. Its light weight makes for easier handling and effects substantial savings during installation. Its smooth interior assures a high coefficient of flow (C=140) and, because Transite can never tuberculate, helps keep pumping costs low through the years.

Why not get all the details . . . find out how this modern-engineered-for-the-job asbestos-cement pipe can help solve your water-line problems and *save you money?* For full information, write Johns-Manville, Box 290, New York 16, N. Y.

JOHNS-MANVILLE JM PRODUCTS



Tough, strong asbestos fibers reinforce Transite Pipe—contribute to its high corrosion resistance and lasting strength.



On machines like this, the asbestos-cement-silica mixture is "built up" under heavy pressure into a dense, homogeneous pipe structure.

Transite's flexible Simplex Couplings help relieve the line of excessive flexural stresses—an added safeguard against pipe failures.

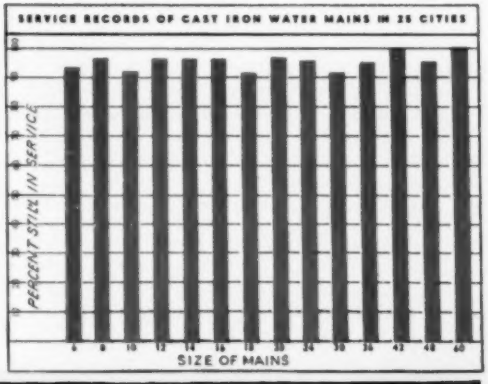
asbestos-cement PRESSURE PIPE

No doubt about the stamina

Service Records of Cast Iron Water and Gas Mains
Pacific Ocean
Atlantic Ocean
Gulf of Mexico
• Black dots represent original cast iron mains in service
• Red stars represent cast iron mains in service 100 years or more

AMERICA PROVES IT! The above map shows cities having some or all of their *original* cast iron water or gas mains still in service. The red stars indicate 34 cities having cast iron water or gas mains in service that were laid a century or more ago.

SURVEYS PROVE IT! A recent study directed by 3 Water Works Associations shows that 96% of all cast iron water mains, 6-inch and over, *ever laid* in 25 representative cities, are still in service.



CAST IRON PIPE

of CAST IRON PIPE...

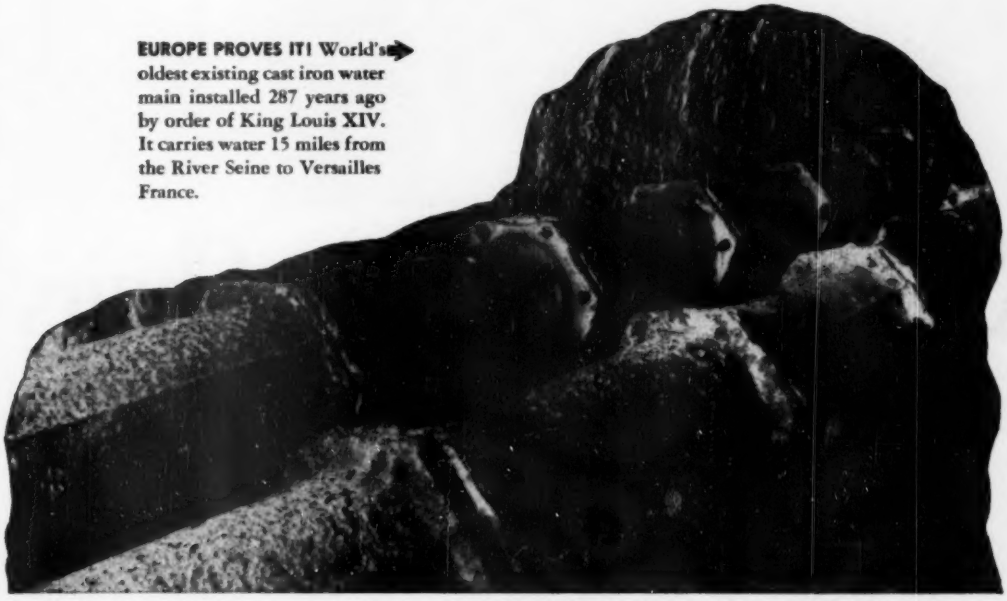
Europe proves it! The oldest cast iron water mains in the world, by authenticated records, supply the town and parks of Versailles, France. They were installed in 1664 and are still functioning after 287 years of service. Other cities in France, Germany and the British Isles have cast iron mains in service that are over 100 years old.

America proves it! Original cast iron mains are still serving 57 of America's largest cities. And 34 cities have either cast iron water or gas mains in service that were laid over 100 years ago (see map).

Surveys prove it! An exhaustive study, directed by a Joint Committee representing 3 Water Works Associations, shows that 96% of all cast iron water mains, 6-inch and over, *ever laid* in 25 representative cities, are still in service (see chart).

Yes, history proves beyond doubt that cast iron pipe has the stamina and the strength-factors that pipe must have to serve dependably under the paved streets of cities, towns and villages.

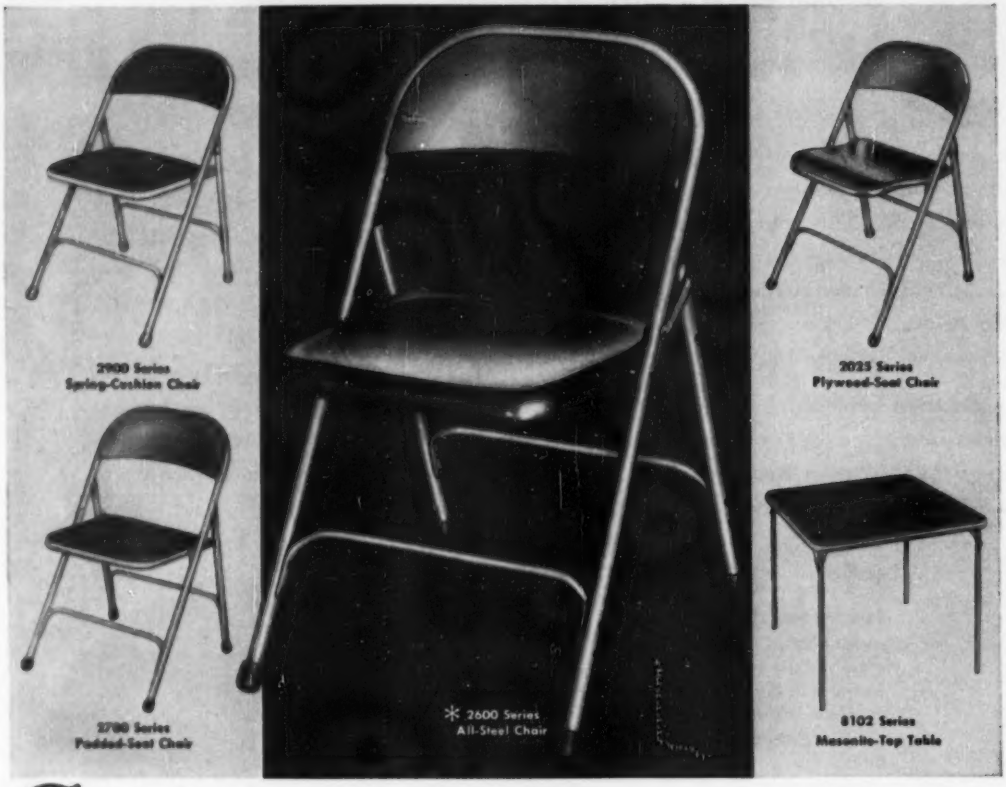
EUROPE PROVES IT! World's oldest existing cast iron water main installed 287 years ago by order of King Louis XIV. It carries water 15 miles from the River Seine to Versailles France.



CAST IRON PIPE RESEARCH ASSOCIATION; THOS. F. WOLFE, MANAGING DIRECTOR, 122 SO. MICHIGAN AVE., CHICAGO 3.

SERVES FOR CENTURIES

America's No. 1 Public Seating Buy!



Samson Folding Chairs

TRY IT FREE—
Test America's No. 1 Public Seating Buy Right In Your Own Office!

● Write us on your letterhead, describing your public seating problem. We will send you, express prepaid, for examination *right in your own office*, the amazing new Samson series 2600 folding chair! No obligation. Special low prices on quantity purchases. Ask your Samson distributor for quotation, or write us direct.

Posture-Designed For Extra Comfort! Steel Construction For Extra Strength! Special Folding Action For Extra Safety!

SAMSON FOLDING CHAIRS are definitely your best public seating buy because they offer you: (1) low cost; (2) long life; (3) real comfort; (4) unsurpassed ease of handling!

***Impartial laboratory tests** by Pittsburgh Testing Laboratories found the Samson 2600 series chair: "Substantial, well-balanced, easily set up or folded, storing in the most compact space, weight uniformly distributed, folding mechanism guards against injury, seat rigidly supports framework, back is properly shaped for comfort."

Leading Users Choose Samson:

United States Navy; Transcontinental World Airlines, Inc.; E. I. DuPont de Nemours & Co.; Denver University Arena; American President Lines; Federal Reserve Bank, *Richmond, Virginia;* National Broadcasting Co., Inc.; Stix, Baer & Fuller Co., *St. Louis, Missouri.*

THERE'S A **Samson** FOLDING CHAIR FOR EVERY PUBLIC SEATING NEED

Shwayder Bros., Inc., Public Seating Div., Dept. L-1, Detroit 29, Michigan

ALSO MAKERS OF FAMOUS SAMSON FOLDAWAY FURNITURE FOR THE HOME AND SMART SAMSONITE LUGGAGE FOR TRAVEL

Make Budgets and Manpower GO FARTHER

with a HUBER MAINTAINER

There isn't a highway or street maintenance problem in the nation that more dollars and more men wouldn't cure.

If either of these limitations is pinching you, don't overlook a few important facts about the Huber Maintainer:

1. It's a 6,000 lb., 42½ H. P. grader with attachments that convert it to a bulldozer, lift loader, mower, broom, snow plow, berm leveler, road planer or patch roller.

2. Its variety of uses keeps it busy every month of the year.

3. It gets around without haulage equipment—covers up to 100 miles in a day.

4. It costs less than half as much as many pieces of maintenance equipment.

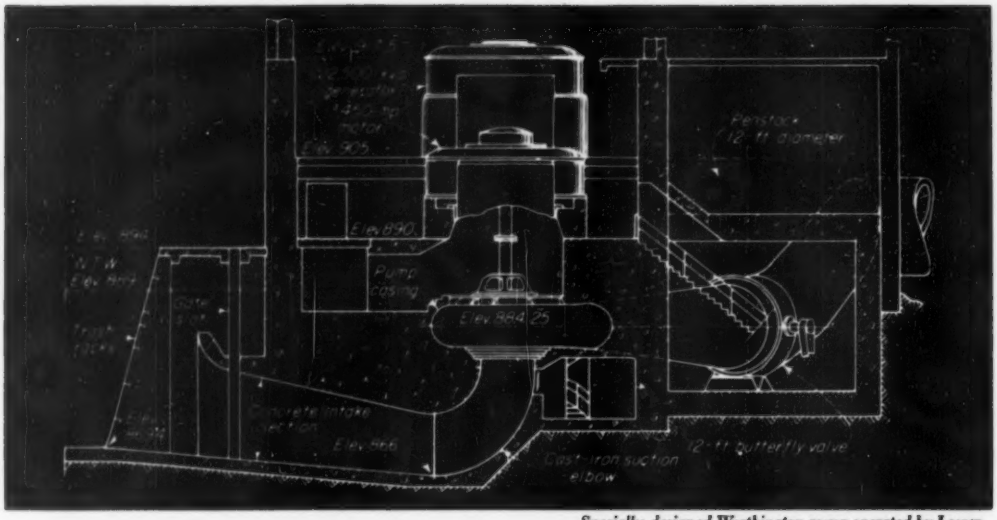
5. It needs only ONE MAN to perform its many jobs.

See your nearest Huber Distributor — get an order placed today.

HUBER MANUFACTURING CO. • Marion, Ohio, U. S. A.

Manufacturers of Huber Maintainers, Graders and Complete Line of Rollers

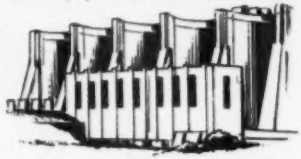
HUBER



Specially-designed Worthington pump operated by Lower Colorado River Authority of Texas, at Buchanan Dam.

Big Pump Banks Hydro Energy

at 360,000 gpm—and low cost!



It's one of the largest in the world—the Worthington pump used for water storage at Buchanan Dam on the Colorado River in Texas.

There are three 12,500 kva generators at Buchanan Dam. The pump is used in connection with the third one. It uses low-cost off-peak energy to store water which can be used at times of peak load.

The cost of running the pump is only one-quarter the value of the peak energy it helps to produce.

This specially-designed pump is rated at 362,000 gpm under 120 ft head, and is driven by a 13,450 hp motor. It has a 164 rpm shaft, bottom-suction, twin-volute, closed-impeller design. The impeller's center line is 4.75 ft below normal tail water level. So the pump is primed at all times and there is no cavitation of the impeller.

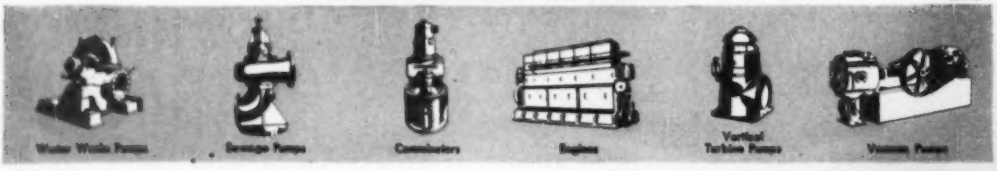
Standards—Specials—a Complete Line

It's another case that proves *there's more worth in Worthington*—proves that Worthington can always supply the right pump for the job. It makes no difference whether tremendous quantities of water are involved as at Buchanan or the relatively smaller amounts required by the average municipality. With the broadest and most complete line in the world, it is often possible to select or adapt a standard model to meet specifications. For detailed information, address Worthington Pump and Machinery Corporation, Public Works Division, Harrison, N. J.

WORTHINGTON

PUBLIC WORKS DIVISION

W.1.5



SCENE: *Model 10* AUTOMATIC SIGNAL IN ACTION

Unseen—by the impatient motorist—is an on-rushing second train, concealed by the first. But there's no danger here of a dreaded "second train accident." Model 10's flashing lights will *continue* to operate, and the barrier arm will *remain* down until both trains have cleared the crossing.

Unseen—something that can't be illustrated: Model 10 *dependability*. Model 10's operate unfailingly, even when temperatures are extremely high or low . . . and regardless of snow or sleet. Moreover, Model 10's are on the job 24 hours a day—never go "off duty."

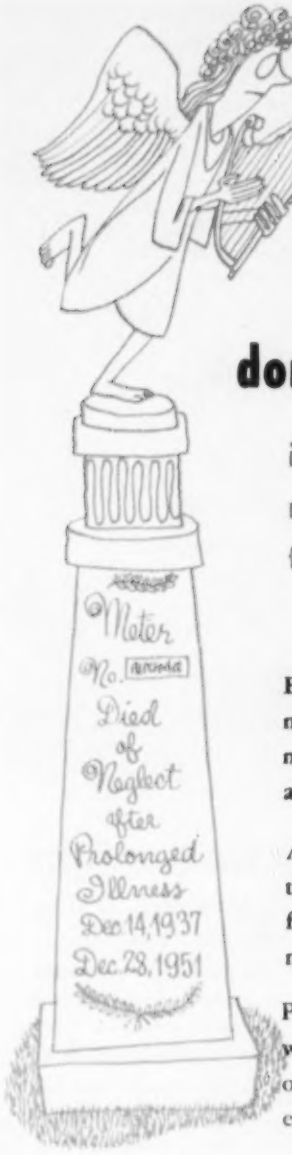
Unseen—the safety record established by Model 10's: Since 1936, thousands of these signals have been placed in operation at busy crossings, and *not a single accident has ever occurred as a result of operation failure.*

Unseen—the considerable dollar-and-cents economies effected by Model 10 protection. The low cost of Model 10 installation, operation, and maintenance is written in the records of a hundred railroads.

There's much more to tell about Model 10 safety and economy. Write for 748-AC2.

WESTERN RAILROAD SUPPLY COMPANY

General Offices and Factory:
2428 SOUTH ASHLAND AVENUE • CHICAGO 8, ILLINOIS



don't neglect your water meters

if you want to get maximum revenue from your water

Estimates indicate that a large percentage of meters in service are never removed for test and repair until they "die". Those departments which have revised their methods find they have been losing as much as 30 to 40% in revenue that could have been collected.

An example from the experience of one such department makes this readily understandable. Out of a lot of 40 meters brought in from a typical residential street for testing and repair, 36 would not even move on ¼ gallon per minute.

Put in a modern meter repair program for your community. You will be surprised at how quickly you will be repaid by the results obtained. Your Trident representative has had considerable experience along these lines and will be glad to cooperate with you.

NEPTUNE METER COMPANY
50 WEST 50TH STREET • NEW YORK 20, N. Y.

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The Symbol of Sustained Accuracy

236

South Pasadena Relines Pipe in "No-Man's Zone"

7,000 feet of 16-inch pipe, heretofore considered too small to be lined by one method and too large to be lined by another, gets a cement-mortar lining by special equipment designed for this pipe size

By DON H. DOLLISON
Assistant City Manager and Water Superintendent South Pasadena, Calif.

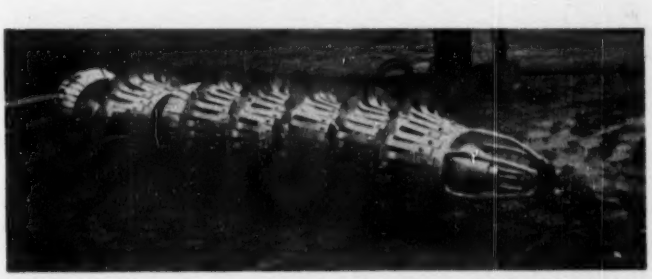
EVERYONE seems thoroughly agreed that a city saves money if it can clean and reline an old water main in place, instead of digging it up and laying new. Everyone also seems convinced that a good cleaning and lining job not only gives the line virtually new pipe-life but also plugs rather serious leaks that a deteriorated pipe may have developed. However, for us, the only trouble has been that these linings couldn't be used in our system.

Our transmission lines lay in a sort of off-base zone. The water industry had available the Centriline process, usable on mains 22 inches or larger; it also could use the Tate process on pipe whose diameter varied from 4 to 14 inches. Of course, as you undoubtedly have guessed, our troublesome transmission lines were in that no-man's zone of 16 to 22 inches.

New Equipment Developed

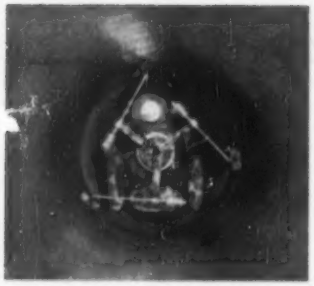
Apparently we weren't the only ones worried about this situation. Because not so long ago the Centriline Corporation, New York City, called its engineers together, and when they emerged from a drafting-board huddle, they had developed a lining machine that filled this gap. Its licensee on the West Coast is the American Pipe and Construction Company of Los Angeles. Obviously, we were mighty interested in this news.

One reason for our interest can be summarized neatly in about 7,000 feet of 16-inch riveted steel pipe reaching from one of our pumping stations to the city limits of San Gabriel, and from there to the center of South Pasadena, eventually winding up at the storage reservoir. This line was 26 years old, was leaking badly, and was responsible for virtually the entire water supply of the city. If we were to replace this line we would have had to spend almost $10 per running foot. As it is, we were able to reline it for a little over $3.50 per foot. And we are thoroughly convinced that the line in its rehabilitated condition will be carrying its quota of water just as long as a line laid with new pipe would be. We may be wrong, but the



This "Go Devil," one of many used to clean the main, was fitted to 16-inch pipe.

The lining equipment set on this platform is awaiting inspection and approval before being placed in the pipe. Note its slim and compact appearance.



Here is the lining machine as it looked on its way through transmission line.

investment certainly was worth a try.

Our part in the work was to furnish water for the hydraulic cleaning, to operate all gate valves, to prevent water from entering the pipe being worked on, and to drain the line if it could be drained by gravity. We also had to replace any sections of pipe so badly deteriorated it appeared unwise to try and reclaim it. Actually, our repair work was limited to a small amount of welding and the replacement of three patches and of two 90-degree bends with bends of longer radius.

Cleaning Operation

The National Water Main Cleaning Company of New York performed the cleaning operation. To do this, they employed their familiar "go-devil," forcing it through the main by water pressure. This has cleaning springs and scrapers that successfully clear away encrustations even around rivet heads and other irregularities. We opened inspection points at approximately 800-foot intervals and other strategic points.

This cleaning work is a dramatic sort of operation if cleaning a pipe can have any element of drama and color to it at all. The "go-devil" is inserted in one of the openings in the pipe and a bend is secured to the other end of the length to be cleaned. This bend curves upward so that the discharge end is at the street level.

Pressure Increased

The cleaning crew then closes the opening in the pipe, sealing the "go-devil" into position, and we very carefully "crack a valve" and start the water flowing in the pipe. As we continue to open the valve, we build up pressure behind the machine and start it down the pipe. As soon as it begins to travel, muddy water starts pouring out of the discharge end. This gets dirtier and dirtier, and the whole affair is climaxed by the appearance of the machine itself shooting out of the discharge tube. Then, to make a happy ending, clear, sparkling water starts flowing out of the pipe as if to prove how clean the pipe now is.

Following this cleaning operation, the Centriline Company brought in its machine that applies mortar. This is a compact copy of the larger machine. It receives cement mortar through a 500-foot length of 1½-inch hydraulic hose and operates by electricity. It applies the mortar by a rotating head which throws the cement mortar against the pipe wall. Steel floats mounted on the machine smooth the mortar to give the resulting lining good flow-characteristics.

The lining averages ¼ inch in thickness. The lining crews required about three hours to complete the first 400 feet. The machine works 400 feet in both directions from each point in the pipeline that is opened. At the end of the day, the pipe is sealed to aid in the curing, and the following day, the pipe is reopened for inspection. Following inspection and approval, the opening is welded closed by using split steel straps, the exterior is recoated with bitumen, and the excavation is backfilled.

On the basis of this successful relining of pipe in what was formerly considered the "no-man's zone" of cement lining work, the city has awarded a second contract, this time for 9,300 lineal feet of riveted steel pipe. And before long we undoubtedly will have all our pipe in strong, rehabilitated condition again without the need for expensive excavation and replacement.

1-Unit Street Maintenance Fleet

By DON LAWSON
Superintendent of Streets
Edmonds, Wash.

APPARENTLY IT DOESN'T make much difference whether a city is large or small, it always has about the same type of problems to face. Streets have to be kept in good shape, and there always are a certain number of loading, hauling, pipe laying, and other miscellaneous tasks to do. Apparently the variety types of tasks don't change much with the size of the city. It is just the amount that varies.

But when the city has only 3,000 people, you can't afford to buy a separate machine for each of these tasks, the way the large municipalities do. So we have one machine with enough attachments on it so that it can do them all.

Our machine is a Huber maintainer. It has a lift-loader attachment that helps us load trucks without the expense of an added crew of men. We use the same lift loader to remove manhole covers and save a lot of hard labor. The loader attachment makes it easy to lay pipe also, and then we can remove it and attach a bulldozer blade so that the same machine can do backfilling.

We also have a hydraulically controlled maintainer blade for the machine. This sees a lot of service keeping our roads and streets in good condition. The combination of maintainer blade and bulldozer certainly does a good job in our alleys and other difficult spots in our street system.

The machine has been operating in our city since 1947 and certainly answers our needs for a "fleet" of street-maintenance equipment.

A "small-fry inspector" supervises as E. John Shirly of the Edmonds (Wash.) Street Department effectively operates the city's one-unit maintenance machine.

Maintaining Unpaved Streets *With Calcium Chloride*

By W. E. DICKINSON
Calcium Chloride Institute
Washington, D. C.

MANY people think that all city streets are paved. Actually, of the 315,756 miles of city streets in the United States, 74,693 are earth and 76,598 are stabilized soil and gravel or stone. Thus 48% of all our streets are still unpaved.

In a city street system, as in any highway system, the type of improvement must be determined by street use and funds available. For unpaved, sparsely populated streets, one of the most economical methods of improvement is spot-treating with calcium chloride for 100 to 300 feet in front of houses. Greater improvement is gained by full-length treatment of streets with calcium chloride to provide dust control.

A city may also profitably treat other dusty areas such as access roads, recreation areas, and ball fields. Dust caused by excavation of paved streets for installation of utilities can be easily controlled by surface application of calcium chloride until permanent repairs are made.

Stabilized Aggregate Surface

The next step in street improvement beyond simple dust-laying is the construction of a stabilized-aggregate surface. Often, some aggregate is present on the street, or the native materials are such that they can be improved by adding material. Whatever the method, the objectives are the same—to arrive at a reasonably well-graded material, from coarse (¾-inch top size) to fine, that contains sufficient binder for compaction. The thickness needed will depend on the volume and weight of traffic, but normally a 4-inch mat is considered the minimum.

Maintenance of such streets with calcium chloride and light blading as needed will provide a smooth-riding, dust-free surface which will meet the requirements for light traffic at low cost. Loss of surfacing material is also greatly reduced by use of calcium chloride, and blade maintenance has been reduced by as much as 75 per cent.

As traffic increases, the street can be improved by covering it with a bituminous surface. Before paving, however, the thickness of the base should be determined and more material added, if necessary. A road that performs well as an open surface may not do so when an impervious top is placed. The other point which should be checked is the plastic index to be sure it is below the maximum of six allowed for bases. This test insures that the material will be stable and not too plastic to fail under loads.

How to Use Calcium Chloride

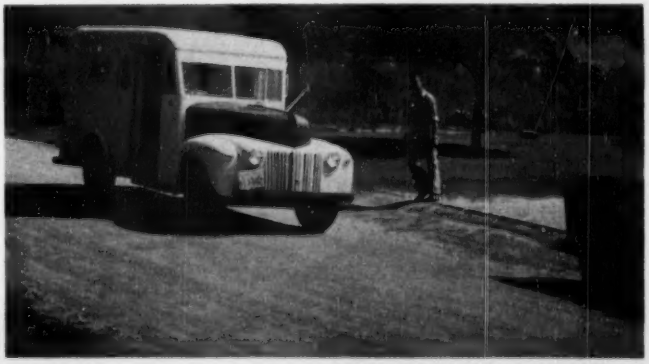
For surface maintenance of gravel-type roads, a normal season's requirement is 2 pounds of calcium chloride per square yard. The first application of 1 pound per square yard is made after the spring rains, when there is some moisture left in the road. It is important that there be some moisture in the road as the calcium chloride will retain it. Another important point is that of blading out rough spots in the street before applying calcium chloride.

Subsequent applications of ½ pound of calcium chloride per square yard are made later in the season when dusting starts. A good practice is to make the later applications just after a rain, following them with a light blading of the road, if necessary.

For new construction of stabilized-aggregate surfaces or bases it is recommended that calcium chloride be mixed into the new material at the rate of ½ pound per square yard per inch of compacted thickness. The advantages of this use are:

1. Greater ease of manipulation, since mixing water does not evaporate too rapidly
2. Less need for rolling
3. Greater density and stability
4. Uniform base smoothness prior to topping.

Calcium chloride applied to unimproved residential streets keeps dust down.



PHOTOS COURTESY OF CALCIUM CHLORIDE INSTITUTE

The chloride helps the gravel and soil compact to form a hard, smooth surface.

Little Rock's Low-Rent Housing Program

This is the first family selected to move into one of Little Rock's new housing projects, opened on January 3, 1952. Mrs. Ida Mathis, with her mother and four children, had been paying $15 a month for this shack, plus $8 per month for wood and kerosene. Family income is less than $1,100 a year. In their new home they will be paying less for rent, which includes light, water, and gas — and will have inside plumbing for the first time in their lives.

By B. FINLEY VINSON *
Executive Director
Housing Authority of the
City of Little Rock
Little Rock, Ark.

LITTLE ROCK is making headway in its attack on bad housing. Three programs are moving in a coordinated plan to (1) provide simple but adequate housing for a substantial portion of the city's lowest-income families, (2) clear and redevelop blighted areas for new public buildings and private housing, and (3) force closing or repair and standardization of hundreds of seriously deficient dwellings.

The Housing Act of 1949 is the key to the Little Rock activity. With aid from the Federal Public Housing Administration, 1,000 new dwellings are nearing completion for families whose income is less than $200 per month. First occupancy of three completed low-rent projects in January allowed the Little Rock Housing Authority to move ahead to final plans for the first Redevelopment Project, with enough new houses coming on the market within the next few months to more than house the eligible families from the clearance areas. At the same time the City of Little Rock moved ahead on a long-delayed program to force owners to close or standardize houses that lack sanitary facilities and other amenities of acceptable shelter. The new public housing is impressive when compared with the city's 1950 population of 102,213.

The low-rent housing program has progressed rapidly. After winning a referendum election in May 1950, the Housing Authority quickly planned and put under construction 928 houses of its 1,000-house allotment. Except for first bids on one 400-unit project which were rejected and readvertised to save nearly $1,000,000 after quick replanning, the Authority considers the bids it has received to be exceptional.

The average dwelling-unit cost so far has been $6,768. Streets, walks, landscaping, utilities, and management buildings cost just less than $900 per dwelling, and land was held, by careful site selection and prudent negotiation, to an average cost of $360 per dwelling. The Housing Authority is proud of its savings to date of about $700,000 of the FPHA approved estimates of cost.

The Housing Authority's success thus far can be attributed to a Housing Board of Commissioners who work at the job, and near-perfect cooperation from local architects, leaders in the real estate profession, and city and business officials. For example, the part played by R. Redding Stevenson, local realtor and long-time chairman of the Authority, has been outstanding. He spent half his time in 1950 and 1951 in assisting and advising the paid staff, planning and pushing the local program. Another board commissioner — vice-chairman and wholesale druggist Purcell Smith, banker George M. Rorex, printing executive George W. Price, and fraternal secretary Paul C. Robinson—all take their jobs seriously. They delegate responsibility, furnish strong support and business advice, then expect results. Former Mayor Sam M. Wassell and the City Council never wavered in their support of the housing program, even in the face of a highly vocal opposition.

The Little Rock Authority completed in January a final application to the Housing and Home Finance Agency for a temporary loan and grant contract for the first slum-clearance and urban-redevelopment project under Title I of the Housing Act. The Dunbar School area project, as it is called, will completely clear seven blocks surrounding the biggest Negro school center in the city, and will "spot-clear" three more blocks so that the best houses from the seven-block area may be saved by relocation and repair. The cleared area will furnish one block for a new community center, the money for which the city already has available; three blocks for expansion of school facilities, and three blocks for privately financed FHA-type apartments in the $45 to $55 monthly rental bracket.

The total cost of the project is estimated to exceed more than $1,000,000, with the HHFA grant paying two-thirds of the loss after sales receipts are added up. Non-cash local grants-in-aid will come from public-facilities construction for the other one-third.

City and Authority Work Together to Open Up Vast Area

The second slum-clearance project is spectacular. Plans provide for the acquisition and clearance of a 100-block "shack town" on the fringe of the city limits where 250 families live without city water, sewers, or garbage collection. The hillside grid-pattern streets are mostly impassable to normal vehicular traffic. And the area lies across multiple railroad tracks and beyond a small river, which, together, have presented barriers to private developers who must put up cash to extend utilities. The city and the Housing Authority joined hands and together are opening a vast new area of expansion for the city's large Negro population, whose living space has heretofore been limited. The city began development of a 500-acre park—and completed the

* The author was formerly Field Office Director, Federal Public Housing Administration at Fort Worth, but resigned to come to Little Rock to head that city's Housing Authority.

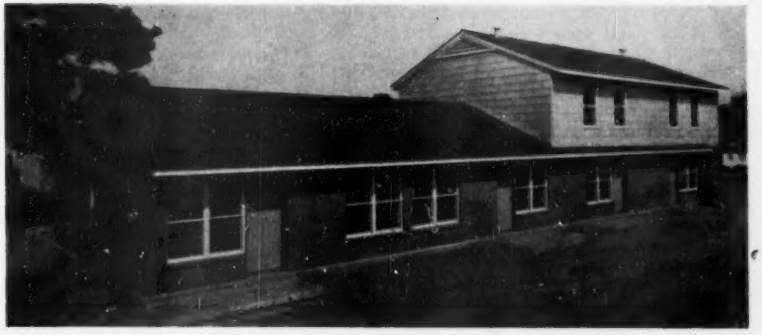
Makes rapid progress, holds costs down; vacant-land development for private and public use effectively combined with central slum clearance

swimming pool and first play and picnic facilities last year. A trunk water line was laid, then the Housing Authority let a contract for its biggest low-rent housing project — 400 houses — to be built on a high ridge with a beautiful view of the city and Arkansas River Valley. The Authority built a trunk sewer line, and began planning a redevelopment project, alongside the housing project, which will furnish sites for new low-cost FHA homes—on contour streets with all utilities available—complete with space for new industries which will help support the new area. Projected plans for a new state superhighway will put the entire area within 10 minutes of downtown.

One of the most important phases of the Little Rock program is the cooperation of the City Council Health Committee and the Department of Health and Sanitation in the timing and execution of condemnations of dangerous housing. "Outside toilets must go, and housing that is a menace to health and safety must be remodeled or closed"—so says the City of Little Rock —and the city received an affirmative answer when it asked the Housing Authority to give housing priority to families in condemned structures so the cleanup could proceed. City authorities had some 300 houses spotted for occupancy condemnation when the Housing Authority opened the first new low-rent houses. Department of Sanitation staff members work closely with the Housing Authority staff in coordinating the program. Care is taken to see that no family suffers, and that all are offered better housing at prices they can afford to pay. Such a program would, of course, be impossible without the volume of new low-rent housing being completed in Little Rock.

So 1952 will see the realization of far-sighted plans to take a deep bite into Little Rock's bad housing problem. Opposition from some real-estate interests is still active. Local officials expect it to continue, in view of national policies of certain real-estate interests to sabotage the housing program at any cost — even at the cost of truth, humanity, and hard-dollar facts. Stiff hurdles are ahead in the slum-clearance program. The planning is completed and now the action starts. But Little Rock believes the job will be done.

Right: A view of the Amelia B. Ives Homes project during the construction process.



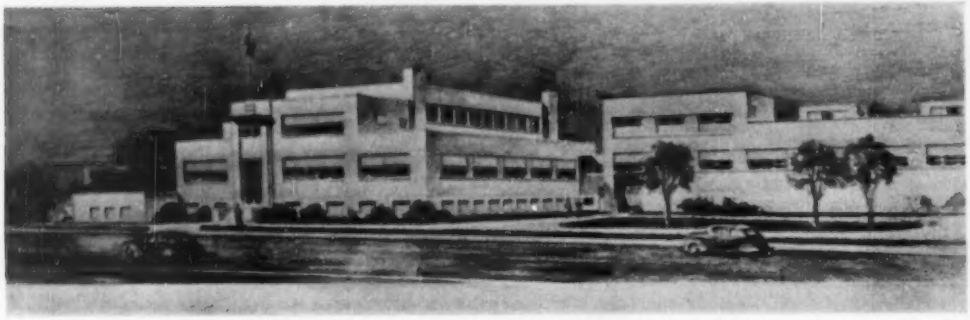
On the Cover

The newly opened Joseph A. Booker Homes, a 400-unit public-housing project for Negroes, is on a hillside site. At upper left center, near the new Veterans Administration Hospital, are the Amelia B. Ives Homes, a 100-unit project with a new 50-unit addition.

Above: A typical dwelling unit in the new Highland Park project, an extension of 110 units to the 74 units that exist at the present time.

Right: A typical building in Hollingsworth Grove, a project of 200 units.

The two new "pollution abatement" projects shown on this page are important factors in New York City's program to keep its harbors clean. Just below is the Rockaway plant.



NEW YORK CITY'S *Newest "Pollution-Control Projects"*

The Rockaway and Hunts Point plants, in the process of being completed, constitute the final steps in sewage-treatment programs for their areas of New York City

THE MORE appealing name of "pollution control" is currently being used to describe the sewage-treatment program currently under way in New York City. Two of these were honored by Mayor Vincent R. Impellitteri, who laid cornerstones for each recently. One, the Rockaway plant, will eliminate all raw sewage from entering Jamaica Bay and permit the restoration of the entire area as a recreational resort. The plant is scheduled for completion early next year, before the summer season. The second, the Hunts Point plant, along with other plants recently completed, will prevent all untreated sewage from the Boroughs of Queens and Bronx from entering the upper East River and Long Island Sound.

The Rockaway plant is one of three in New York City that uses the "modified aeration" treatment. This cuts operating costs by reducing the quantity of air required for treatment; in these cases, it also reduces construction cost by doing away with the expense of a primary settling-tank structure.

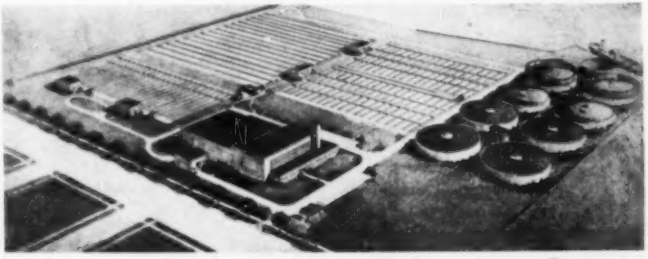
The designers gave unusual attention to the appearance of the final effluent. In order to insure that no offensive floating matter will escape through the plant outfall, all effluent must pass through a Link-Belt, mesh-type mechanical screen as the last step in the treatment. This screen is the type normally used to remove trash in water intakes.

The plant is designed for a capacity of 15,000,000 gallons per day, contributed from a population of 90,000. It has a maximum pumping capacity of 32½ mgd supplied by four Morris Machine Works pumps rated respectively at 7½, 10, 15, and 15 mgd. The maximum pumping capacity allows one large pump to be held out of service.

The grit will be removed in a chamber by Link-Belt removal equipment and washed by a Dorr grit washer. The aerated grit channel contains removable diffuser plates that will make it easy for them to be cleaned in case of clogging. The aeration tank uses Chicago Pump Company swing diffusers with Precision diffuser tubes. The settling tank provides 3 hours of detention and uses Jeffrey sludge collectors to remove the sludge.

The plant has four 50-foot-diameter digestion tanks. Methane gas, a by-product of the digestion process, will be used as primary fuel in three Chicago Pneumatic Tool Company, dual-fuel engines of 300 hp each. These will provide most of the plant operating power. Waste heat from the engine exhaust and jacket water will be utilized to heat the buildings and digestion tanks.

The Hunts Point plant will provide full activated-sludge treatment by the



The Hunts Point sewage-treatment plant, now under construction, will prevent untreated sewage from entering the upper East River and Long Island Sound.

step-aeration process. As in the case of the Rockaway plant, it also uses digester gas for power in gas engines. In this case four Cooper-Bessemer gas-diesel engines will be used, each rated at 900 hp. Two are directly connected to blowers; two can drive either a generator or blower through a common driving shaft equipped with a disconnecting clutch.

The two engines, driving as electric generators, are rated at 840 kva at 0.8 power factor.

The four blowers are rated at 21,000 cubic feet per minute each at 8 pounds' pressure. They are designed to supply at least 0.75 cubic foot of air per gallon of sewage at the 120-mgd flow rate with one blower out of service. The aeration tanks use Chicago Pump Company swing diffusers with Precision diffuser tubes to administer air to the sewage.

The primary tanks use water jets for skimming rather than mechanical scrapers.

Butterfly Valves on Pump Discharge

The raw-sewage pumps use the less expensive butterfly valves on the pump discharge rather than the customary cone valves. Moreover, the pumps do not discharge to a common header and then to the grit chambers. Instead, each pump is connected to a pair of grit channels and serves it exclusively. Connecting gates will allow some flexibility of operation. There are five pumps, all Worthington; two are rated at 50 mgd; one at 60 mgd, and two at 70 mgd. Space has been allotted for an additional 60-mgd pump, if needed.

The plant has eight digestion tanks and will use them in stage digestion. Half will be used for primary digestion, and half for secondary. Two of the secondary tanks will have Chicago Bridge and Iron gasholder covers. The remaining six will have concrete-slab roofs with a small gas-collecting dome. The tanks are built of wire-wound, prestressed concrete to the design of the Preload Company of New York. This enabled the designers to enlarge the inside diameter of the tanks from 115 to 118 feet by reducing the thickness of the walls.

Planning and construction of both projects are under the jurisdiction of Frederick H. Zurmuhlen, Commissioner of Public Works. Plans for the Rockaway plant were prepared by Metcalf and Eddy, consulting engineers, of Boston, Mass., under the direction of the Public Works engineering staff headed by Richard H. Gould, Director, and Wellington Donaldson, Assistant Director, of the Division of Sewage Disposal.

Plans for the Hunts Point plant were prepared by Greeley and Hansen, consulting engineers of Chicago, also under the direction of the same staff.

All Wayne County Records Are Being Microfilmed

By STANLEY L. NOWICKI
Director of Reports and Statistics
Detroit, Mich.

File drawers for documents occupied 90,000 cubic feet of basement space.

WHEN the Wayne County, (Mich.) Board of Supervisors selected the suggestion of microfilming all county records for the grand prize of $250 in an employees' suggestion contest, the first step was to appropriate $15,000 for experimental work. The second was to ask how the operation was to save money if such an expense had to be incurred in advance of doing anything at all.

Now that the job is well along and the Board sees these gains: searching time has been cut 86%, storage space has been reduced 99%, and the records are safe.

The system was set up in the steps given below and various advantages developed as shown. Remington Rand Film-a-record equipment was selected because of the excellence of the film, the method of indexing for quick reference, and the help rendered by the company. In addition to camera and reader, we have a processor that develops the morning's first 100 feet of film in 35 minutes, and thereafter at a rate of a spool every 11 minutes. Speed is important with us because our objective is to film every document in every department.

Lost Records Come to Light

Many older records were stored in the basement and hard to get at. Occasionally an applicant was informed that a wanted record couldn't be located. Most of these lost ones came to light during the business of selecting for microfilms. It really wasn't carelessness. It will happen to any municipality or county doing this kind of job. The job really amounts to a complete audit of the county's records. This aspect alone is of great value.

Using a Remington Rand continuous daylight processor, Wayne County keeps control of records. Each processor can develop up to 30 rolls of microfilm daily, each indexed roll containing 3,000 letters, or 22,000 checks.

Records are protected not only by having one or more film records. There is the element of preservation by ceasing to wear out the original records. Many of the papers we microfilmed had become brittle and torn. We're microfilming all of them because those no longer having legal force often possess historical value that increases every year. Like many or most governmental units we were negligent about the historical aspect. From now on our records belong to the ages.

Yes, Championship Wool From a Water Works

NO ONE was more surprised than the judges when they discovered that the Akron (Ohio) Water Department was the winner of second prize in the International Stock Show, Wool Show Division, Market Wool Class. It surprised them because Ohio isn't a wool-growing state, and furthermore they couldn't understand what business wool had coming from a water works.

But Chief Engineer Wendell LaDue, head of Akron's Bureau of Water and Sewerage, knew the answer. The Department maintains more than 1,000 sheep on watershed lands as part of a controlled program to prevent erosion and damage to the reservoirs (see pages 86-87 of the January 1952 issue).

"We came in for some good-natured ribbing about having championship wool to pull over the eyes of the public," said Mr. LaDue. "I tell them that everything the Water Department does is in a championship class."

Cities are improving this service, State Health Survey shows, but more improvements are needed

How Refuse Sanitation Looks in Ohio

LAST YEAR, Ohio's State Board of Health looked at refuse-collection and disposal facilities and found that, while they were improving, they still had a long way to go before they could be considered good.

On the improvement side of the ledger were the entirely new programs installed in seven Ohio cities. Six cities replaced incomplete, private collection service with a thorough municipal service, and replaced hog feeding and open dumping with the sanitary landfill. The seventh replaced an inadequate private collection system, using hog feeding and open dumping, with contract collection reaching the entire city, and sanitary landfill. Three other cities have replaced inadequate collection systems with complete, municipally operated systems. Two other cities have replaced open dumps with the sanitary-landfill disposal. Forty-six cities have made improvements in storage conditions of the garbage at the household and business locations.

Improvements Not Costly

However, objectively viewing both the good and the poor features of refuse sanitation, Ohio cities have a lot yet to do; and these improvements need not be costly.

For example, although 85% of the cities have ordinances controlling storage of refuse on the premises, almost half of the small cities tolerate the storage of garbage under conditions that the Health Department considers "very poor." Obviously the cost of enforcing these ordinances would be nominal and the benefits great. Of significance is the fact that those cities with municipal collection of garbage had storage conditions that rated "fair" or "good," consistently better than those using private or contract collection. Slightly over 50% of the cities have municipal collection services for garbage and 44% have municipal collection services for other refuse. Most cities operating their own systems or entering into private contracts use covered packer-type metal collection vehicles. The private haulers, the report shows, use the antiquated open trucks.

The study also shows that about 34% of the cities still depend entirely on private haulers for garbage collection and about 44% depend on these haulers for refuse collection. In effect, these cities have no bona fide collection service. About 65% of the cities use dumps and hog-feeding farms exclusively for disposal of garbage and refuse, where only a little more investment would enable them to gain the benefits that the sanitary fill yields.

How Storage Can be Improved

Common weaknesses in the storage of garbage at the homes were the lack of containers or the use of worn-out containers that frequently had no cover. Many commercial establishments use large boxes, pits, and bins which suffered because of inadequate cleaning, thus producing odors and encouraging the breeding of both insects and rats.

Civic cooperation through the newspapers appeared to be the most effective means of combating this difficulty. Some cities asked the hardware stores to stock plenty of containers during these campaigns and noted a decided improvement in conditions, and an encouraging drop in the cost of refuse collection.

In one small city, the sanitarian from the health department goes through the alleys once a month to check storage conditions and makes a personal call on householders with poor garbage containers.

The refuse-sanitation service is financed in Ohio by service charges in most cases. However, those using municipal or contract collection prefer paying for the service from the general

GARBAGE AND REFUSE DISPOSAL METHODS

Method of Disposal	Over 100,000	25,000 to 100,000	10,000 to 25,000	5,000 to 10,000	All Cities	Percent
Incinerator for Garbage ONLY Dump for all other Refuse	2	5	4	0	11	9.1
Incinerator for all Combustible Wastes Dump for all Non-Combustible Wastes	5	6	2	7	20	16.5
Hog feeding of Garbage Dump for all Other Refuse	0	9	30	17	55	45.4
Sanitary Landfill for Garbage ONLY Dump for all Other Refuse	1	1	0	0	2	1.7
Dump for all Garbage and Other Refuse	0	0	2	21	23	19.0
Sanitary Landfill for all Garbage and Other Refuse	0	4	5	1	10	8.3

Types of Refuse Collecting Services

Collection System	Over 100,000		25,000 to 100,000		10,000 to 25,000		5,000 to 10,000		All Cities	Percent
	G	R	G	R	G	R	G	R		
Municipal	8	5	15	12	17	16	22	20	62	51
Contract	0	0	2	9	5	1	5	1	12	10
Private	0	0	5	3	19	25	17	22	41	34
Municipal and Private	0	0	2	0	1	1	1	2	4	3
Contract and Private	0	0	0	0	1	1	1	1	2	2

NOTE: "G" represents garbage; "R" represents refuse

fund at a ratio of about two to one. In cities where collection services, either municipal or contract, are financed out of the general fund, the service is available to all parts of the city and coverage approaches 100%. Where service charges are made, the coverage ranges from 20% to 90% with an average of about 65%.

Most cities provide weekly collections in the residential sections and daily collection in the business areas for all types of refuse. A number of cities provide twice-weekly collection in the residential sections during the summer months for garbage, or for garbage and other combustible waste in cases where incinerators are used. Many cities collect only refuse other than garbage, or refuse other than combustible waste, every two weeks, and sometimes only once each month in residential sections.

As indicated previously, about 65%, or 78 of the cities, still use dumps exclusively, or hog farms and dumps.

GARBAGE AND REFUSE STORAGE – PERCENT SATISFACTORY

Percent of premises maintaining satisfactory storage	Cities Over 100,000	Cities 25,000 to 100,000	Cities 10,000 to 25,000	Cities 5,000 to 10,000	All Cities	Percent
80% to 100% (Good)	5	9	11	7	32	26
60% to 80% (Fair)	3	6	4	8	21	18
40% to 60% (Poor)	0	5	16	10	31	25
Under 40% (Very Poor)	0	4	12	21	37	31

These dumps receive little attention except when located close to populated areas where public demand required some attention. All too often insect and rodent control was neglected.

Even those cities using incinerators often find that inadequate capacity forced them to divert the garbage and other combustible refuse to dumps when collections were heavy. Those cities using incinerators often neglected the dumping area used for the disposal of the burned residue.

Of the 12 cities using the landfill method, 10 showed good and successful operation. However, two operated their landfills no more successfully than open dumps. Proper management, as necessary as proper equipment, would have corrected this difficulty.

Costs

The cost for refuse collection varied from $5.63 to $9.12 per ton. Disposal costs range from $0.55 for the sanitary-landfill operation to $2.68 for operation of incinerators. A complete collection and disposal program for all garbage and other refuse costs from $2.18 to $2.82 per capita per year.

How to Purchase Trucks and Slash Budgets

By M. M. DONOHUE
Purchasing Agent
County of Allegheny
Pittsburgh, Pa.

ALL one has to do today is to glance for a few moments at old movies on television, 1915 vintage, to realize how the last 35 years have changed the truck. Today's truck is so different from that of yesteryear's that only seeing is believing. It is a demonstration of the ingenuity and knowledge that are applied to a standard product through the years. The purchasing agent must have the skill and the knowledge to adapt such changes to his particular needs. Thousands of dollars can be saved on his decision as to the size or weight of trucks purchased, as well as the maintenance factors.

As President of the National Institute of Governmental Purchasing during 1951, I received many letters from public purchasing agents requesting information on how to purchase trucks on competitive bids instead of confining their specifications to one manufacturer. The problem is not a difficult one. If the purchasing agent will discuss his requirements with manufacturers and dealers at a round-table conference, it is remarkable how quickly a good specification can be written. In 1948 the Commissioners of Allegheny County decided that the county's entire classification of trucks and heavy equipment should be studied with the idea of standardizing, if practical, on smaller equipment. They were particularly interested in how many of our trucks were in the large-size category. Acting on their directive, the Purchasing Department first called into conference directors of all departments which used trucks. Then we went one step further and called in all truck drivers. They know most of the answers at the trucking level. From this conference we decided that the county truck-weight requirements should be scaled downward.

The County's Highway Division is divided into five districts and it was felt that each district should have no more than one 5- to 7½-ton truck, which would be used for extra heavy emergency work. The rest of the county's fleet was revised downward, with the top weight 3½ to 5 tons. This decision saved the county thousands of dollars.

Armed with this information, the Purchasing Department invited all truck manufacturers and their representatives to a round-table conference, informed them of our findings, and requested that they aid us in writing a specification which would be fair to all. The conference was lively and informative and, to our amazement, three hours later a satisfactory specification had been written and subscribed to by all present.

Strange to say there was little argument as to type of tires, wheels, frame adjustment, brakes, etc. The main discussion centered about the engines. The engine was to be of the six-cylinder type. After some heated discussion the majority of the representatives agreed to a minimum piston displacement of 306 cubic inches.

Bids Advertised

Bids based on these specifications were duly advertised in the daily newspapers, and quotations were received from five manufacturers, all bidding to the specifications. There was a difference of $13,250 between the lowest and the highest bidders. To the saving one must add the savings effected in the maintenance costs by the purchases of smaller units.

Over the years our purchasing department has held many similar conferences, solving problems on a variety of items, including furniture, fire engines, carpeting, and clothing. States, cities, and counties are streamlining government. Modern purchasing and accounting procedures are sharply demonstrating many ways to slash yearly budgets. Conferences such as these are an element of the purchasing agent's contribution in furthering good government and public relations.

"Every Street Hard-Surfaced"

Kokomo, Ind., develops a low-cost street-improvement program patterned after the work in La Porte City and gets good all-weather surfaces using new equipment and methods

By RAY E. HAVENS
City Engineer
Kokomo, Ind.

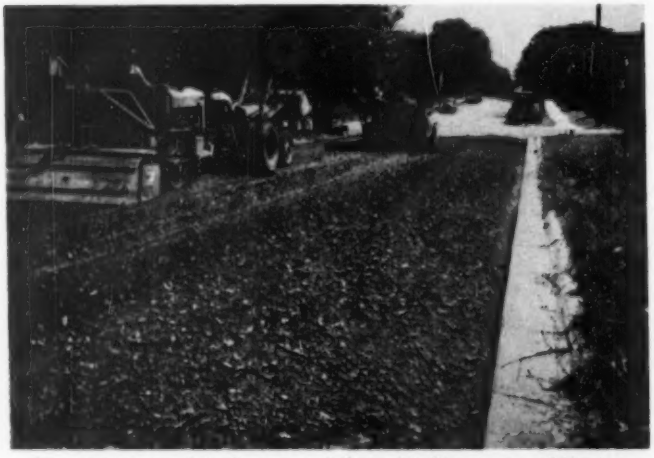
ANYONE who thinks municipalities don't have competition is crazy. And anyone who has the idea that competition doesn't have its benefits is just about as far off base too. Our present street program shows how a little competition helped us in Kokomo to get rid of our muddy, dusty, unimproved roadways.

In the past, we used the time-honored system of maintaining unimproved streets by scarifying them, blading the loose material to proper crown and grade, rolling, and oiling. It cost about 15 cents per square yard and generally lasted until the first heavy rain, when the base would soften and the surface would rut. Sometimes we helped matters a little by using an MC-0 cutback asphalt instead of an SC-0, but it still didn't give us a street that we were particularly proud of.

Then one day we heard stories coming from La Porte City that every street in town was surfaced. You could drive anywhere in the city and never travel on a dirt street, they told us. Pretty soon it became plain that if La Porte City could do this, Kokomo certainly could, too.

So we took a trip over there and looked around. We found that they were scarifying the surface, adding stone and asphalt, processing the stone and asphalt with a Seaman Pulvi-Mixer, spreading, and rolling. We found that they had a sandy berm for the surface water to drain into and thereby eliminated much of their drainage problem.

Obviously we couldn't use their method down to the last detail. One difficulty was that we don't have the sandy subsoil. But we could use the Pulvimixing method and make what is in effect an asphalt stabilized base that would be better able to resist the rain and weather.



Very coarse material is often successfully used in bituminous stabilization.

The Seaman Pulvi-Mixer—note that the oil truck travels immediately before it.

Five Blocks for a Test

So in 1948 we tried out five blocks of Pulvimixing. On dirt and cinder streets we filled the holes and low places during the winter and spring months. Later we "tailgated" 60 pounds per square yard of No. 8 or No. 9 stone onto the street. Then we scarified the surface to mix the stone with some of the natural soil, and "shot" the street with 0.5 gallon per square yard of AS-2 or AS-200; then Pulvimixed the whole mass. Then the material was windrowed and road-mixed, and again shot with 0.5 gallon of asphalt and remixed. Next we primed the base with 0.25 gallon per square yard.

The next step was to lay out the material and roll it immediately with a 7-ton rubber-tired roller. Twenty-four hours later we wheel-rolled it with a 10-ton 3-wheeled roller. After it had cured, about 30 days later, we dug out the fatty spots, if any, and patched them. We then sealed the surface with 0.3 gallon of MC-4 or MC-5 and covered it with 20 pounds per square yard

of pea gravel or stone. We prefer pea gravel on residential streets to avoid stone dust.

This type of street costs us 45 cents per square yard. It replaced street surfacing that requires oiling one or two times a year. Three years of oiling will pay for a Pulvimixing job that will at the same time get rid of puddles and holes.

Of course, we always will have some alleys requiring road oil, but the traffic in alleys is usually lower than on streets and the dust is not bothersome.

Another advantage is that the surfacing eliminates the grit and cinders that used to reach our catch-basins and wind up in our grit chambers at the sewage-treatment plant. Obviously these cinders didn't do the impellers of our pumps any good, so we save from both ends.

In 1949 we Pulvimixed about 9 miles of dirt and cinder streets. In 1950 we repeated the operations on about 11 miles of streets, paving 124,300 square yards at an average cost of 45 cents per square yard. The total cost ran $56,000. Just to compare figures, last year we laid a 6-inch concrete slab, 36 feet wide and 1,300 feet long with curb and gutters, for a cost of $24,361. The city paid 27% of the cost for drainage, excavation, and street and alley intersections. Thus half a mile of this concrete paving will cost the equivalent of 11 miles of the Pulvimixed street. We think it better to make 11 miles of people comfortable than it is to make half a mile of people comfortable and satisfied.

This Pulvimixing treatment ought to last several years. On the better jobs, we can resurface with 1½-inch hot mix at the cost of 75 cents to 89 cents per square yard, and probably run the total cost to no more than $1.00 per square yard. With a surface 18 feet wide, the cost would be $1.00 per lineal foot for each side of the street.

We processed approximately 17 miles of dirt and cinder streets in 1951 and shortly will say with La Porte City that we don't have a dirt street in town.

More Revenue from Every Gallon Pumped

Milwaukee, Wis., concentrates on its meter-maintenance program and gains revenue; the city also adopts simple rules for lawn sprinkling that reduce peak-load demands and eliminate need for plant expansion

By EDWARD F. TANGHE
Superintendent
Milwaukee (Wis.) Water Works

SOMETIME AGO we reviewed our water rates and revenues and discovered that we are furnishing *filtered* water today at substantially the same price that we charged for *unfiltered* water 30 years ago. Moreover, even in the face of the skyrocketing prices in every other field, we have been able to maintain our water service without a rate increase—a fact that today seems as unbelievable as defying the laws of gravity.

Of course our costs have gone up—actually more than quadrupled in 30 years, doubled in 10 years—but at the same time, we have been prompt to take advantage of engineering advances that have stepped up our efficiencies also. More efficient pumps, better motors, skilfully designed distribution-system improvements that keep head losses low, all have played an important part in keeping this economic balance.

One factor that has been most helpful has been the attention we have given to our water meters. About 10 years ago we decided to pay more attention to our meter-maintenance program. The increased revenue per 1,000 gallons of water pumped is primarily due to the better registration of the water users' meters. From 1940 to 1949, this program has raised the ratio of metered water used from 76.9% to 87.0% of the total water pumped, and has raised the revenue per 1,000 gallons pumped from $0.0697 in 1940 to $0.764 in 1949.

Another factor that has very definitely reduced our need for large capital expenditures for feeder mains, pumps, storage units, and filter equipment has been the introduction of lawn-sprinkling regulations about four years ago. Between June 1 and September 15, we require that the residents on the southwest sides of the streets refrain from sprinkling their lawns between 5:00 p.m. and 8:00 p.m. on Mondays, Wednesdays, and Fridays. Residents living on the northeast sides of the streets may not sprinkle between these same hours on Tuesdays, Thursdays, and Saturdays. Sprinkling is permitted at all other times.

The net effect of these mild restrictions has been to reduce the peak water use to a figure equal to what it was about 15 years ago. During this same period average daily water use has increased each year about 50%.

The urgency of plant additions has thus been removed. This relatively more efficient use of our plant may be contributing to the higher percentage of water pumped being sold through meters. Relatively less feeder-main capacity is required to furnish the annual consumption.

The increased water use, plus the reduction in peak rate of use, plus the increased meter-maintenance program, and the reduction in the number of times meters are read has enabled us to *net* the same amount of money today that we did before World War II. Operating costs have more than doubled in the last 10 years.

Milwaukee's 200-million-gallon-per-day water-treatment plant. Careful attention to management and adoption of advances in engineering have made it possible to supply water at the same rates in spite of doubled production costs.

Mix, Settle, and Filter —In One Unit

Alexandria, Va., Water Company builds "purification units" that combine chemical flocculation, settling, and filtering, and cut construction costs nearly in half

CONVENTIONAL in process, radical in design is the proper way to describe the new Alexandria water-filter plant. It is conventional because it takes raw water from an impounded reservoir, treats it with alum, lime, carbon, and chlorine; mixes it, settles it, filters it, supplies a pH correction to prevent troubles in the distribution system, and supplies post-chlorination in accordance with the classic practice followed the world over.

It is radical in the design of its filters. One who is unfamiliar with the plant can't even find them, for in Alexandria, the filters are built around the settling basins as a concentric ring. When the settling basins are operating, the filters are under 8 feet of water and look like part of the basins themselves.

The plant is one of the water utilities operated by the American Water Works Service Company, Inc., of Philadelphia, Pa. The unusual design was a development of E. H. Aldrich, chief engineer. In dollars and cents, it means that this plant, with a 12-mgd filter capacity and 12-mgd high-lift pumping capacity, cost, at 1950 levels, only $58,700 per million gallons of capacity. A plant of similar design using the conventional filter building, constructed by this same company, cost over $100,000 per mg of capacity.

The purification plant, easily the most interesting part of the general waterworks improvement, was only a portion of the over-all program. The area served by the company consists of sections of suburban Washington, D. C., lying in Virginia. This area for many years held the record of being the fastest-growing area in the country. Only recently has this growth begun to taper off, and other areas challenge the lead.

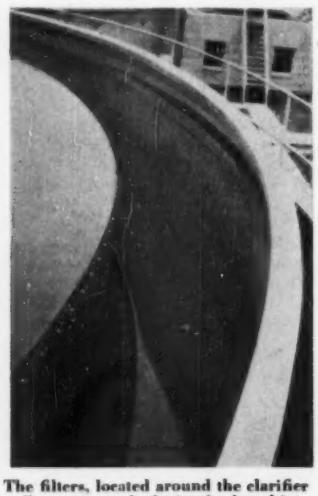
The supply itself was troublesome. At one time, a stream fed by a watershed with a 33-square mile area provided the water through the help of an 800-mg impounding reservoir. However, this reservoir suffered not so much from increased use of water as from infiltration losses caused by near-by sewers, recently constructed, that depleted the water supply through infiltration. The added demand for water was important, however. Parts of the area were being retarded seriously because of this lack. Well supplies had proved themselves unreliable.

However, about 20 miles of south Alexandria was another stream having a drainage area of 550 square miles. This stream already had a dam, now unused, impounding roughly 2,000,000,000 gallons of water, built in connection with a proposed power development many years ago. To avoid building an unnecessarily long transmission line, the company built a concrete gravity-type dam about 450 feet long and 30 feet high at spillway level, designed to store about 55,000,000 gallons. As the water is used from this dam, the larger-capacity upper dam will replenish it, to keep the supply adequate.

Water-Powered Pumping

The water supplies power for pumping as well as for water distribution. The intake structure has three compartments; two of these feed the water-pumping power station, and the third delivers water to the raw-water supply conduit. This third compartment is equipped with a Link-Belt fine-mesh

The filters at the Alexandria, Va., purification plant are visible, but can you find them? All filter controls, but not the filters, are in the buildings.



The filters, located around the clarifier walls, appear only during backwashing.

All filter operations are controlled from this panel which is located inside the pump building at the plant.

It is possible to use either water or electric power to bring the raw water to the purification plant.

traveling screen as well as a coarse bar screen.

The water goes in a triple-barrel conduit approximately 2,000 feet to the raw-water pumping station. The water used for power discharges into two 54-inch steel penstocks connecting with the turbines. The remaining water discharges into a 36-inch steel suction line connecting to the raw-water pumps.

The conduits are protected by a 24-foot Hammond Iron Works steel surge tank. The power conduits are cross-connected with the raw-water conduit.

The raw-water pumping station houses three 4½-mgd Ingersoll-Rand pumps. Two of these can use either electricity or water power. The third is electrically powered only. The station also has an electric generator powered by a vertical James Leffel & Company, Francis-type turbine. Most of the time, the reservoir supplies enough water for all three turbines. The Francis turbine supplies power, not only to these pumps, but to the high-service pumps at the treatment works and also for lighting and other needs at the station.

From the pumping station, the water goes another 2,500 feet to the new treatment plant, flowing through a Lock-Joint 30-inch prestressed concrete pipe. The pumps have to lift the water to an elevation approximately 245 feet above the pumping station.

It was at this station that the ingenious method of supplying filters was put into practice. The units require a new name, and Mr. Aldrich has christened them "purification units." He uses four of them; they are round, fabricated of steel by the Hammond Iron Works. They have a flocculation or mixing compartment of 24 feet in diameter; a settling compartment of 76 feet in diameter, and a circular filter ring 84 feet in diameter. The tank's water depth is 15 feet. Each filter was designed to operate at 2.25 mgd; however, they have been operating successfully at rates of 3 mgd.

Chemicals enter the water in the raw-water pipeline as it enters the central mixing compartment. They receive a quick mix in this entrance line and a slow mix in the chamber. The chemically laden water is introduced tangentially and proceeds out of the compartment at the bottom through baffled, horizontal slots. The water then slowly proceeds upward and outward until it passes over the outer rim of the filtering compartment and over to the filter ring.

This ring is 3 feet wide. It uses a sand bed of a little more than 30 inches supported on a Carborundum Company, porous-plate filter bottom. Between the filter and the settling-compartment wall is an overflow rim and gutter used when the filters are backwashed to carry away the wash water. This overflow drain-gullet is a foot wide and sloped to the drain gutter. The filters do not have a surface wash. A small filter building contains the various piping, valves, and controllers required to control the filter operation.

Backwashing

The filters can be backwashed either manually or automatically when the head loss reaches 8 to 10 feet. A system of Builders-Providence pneumatic controls governs the operation of the hydraulic valves. All that the operator has to do to wash is to press a button. He can provide selective two-stage washing or prolonged washing if needed. At present, the sequence provides approximately 9 inches' rise per minute for 3 minutes to agitate the sand slowly, and then 18 inches' rise per minute for 5 minutes for the final wash. The operator can inspect the filters during the backwashing, but he need not do so.

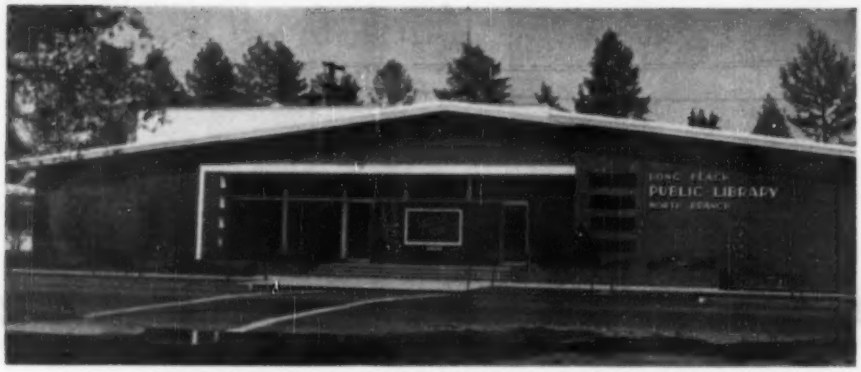
The same building that houses the controls also holds the chemical feeders, chemical storage laboratory, and office. It also contains three 4½-mgd high-lift pumps and accessory equipment. It has two alum-solution machines designed by the water utility, two Savage-Gaunt lime machines, a lime-saturator tank, and space for four carloads of chemicals. An Omega activated-carbon feeder is located in a separate room that also stores the carbon.

The plant uses chlorine in ton containers and has the chlorine cylinder scales and Wallace & Tiernan chlorine feeders in adjacent rooms with scale dials visible in both. A Wallace & Tiernan continuous chlorine-residual recorder is in the chlorine room.

Operating Advantages of the Design

The design of the filters with the mixing and settling tanks provides certain operational savings. First of all, there is virtually no loss of head between the settling tank and the filters. In many plants this loss of head is substantial. Next, the flocculation provides gentle action of the chemicals, and the water passes to the filters without disturbance so that the floc itself is not broken and dissipated. Again, the depth of water over the filters averages 8 feet. This prevents negative head from developing in the filters, such as may be expected in conventional filters.

The filter runs range between 15 and 65 hours at head losses of 8 feet. They require about 1½ to 2½% of the water for washing purposes. The plant was designed by H. J. Carlock, Chief Design Engineer, C. E. Trowbridge, Chief Sanitary Engineer, and D. F. Bixler, Mechanical Engineer. The construction was directed by G. A. Woodhouse and E. F. Meyer, Construction Engineers. Howard Richards is manager of the Alexandria Water Company.



An extremely desirable feature of the North Branch Library at Long Beach, Calif., is its bulletin board, always attractive, and strategically located so as to catch the eye of passers-by.

Good Design

Is a feature of new Long Beach Branch Libraries

By **FRANCES HENSELMAN**
Long Beach Public Library
Long Beach, Calif.

TWO NEW, functional-modern branch libraries are the partial answer of Long Beach, Calif., to the demand for additional library services created by the city's rapid war and post-war population increases.

Designed of brick and glass on reinforced steel frames, both libraries feature large windows, outdoor display cases, small auditoriums and a single reading room, partitioned into adult and juvenile sections by bookstacks. Thus, the rooms can be adjusted at any time to meet changing floor-space needs.

East Long Beach Branch is on a commercial street corner. Its front has more glass than brick and commands the attention of every passerby. It covers 5,225 square feet and has a book capacity of 17,000 volumes. Francis J. Heusel, A.I.A., was the architect for the building, which was completed in July 1948 at a cost of $60,000.

Contrasting with East Branch, North Long Beach Branch Library is just off a business center in a residential block. Its glass wall opens onto a reading patio, enclosed by a redwood fence. More brick than glass at the front, it too fits its surroundings and its interior is light and attractive. It has cobalt blue and dull rose walls with cream yellow trim and birch furniture and shelving in a natural light finish.

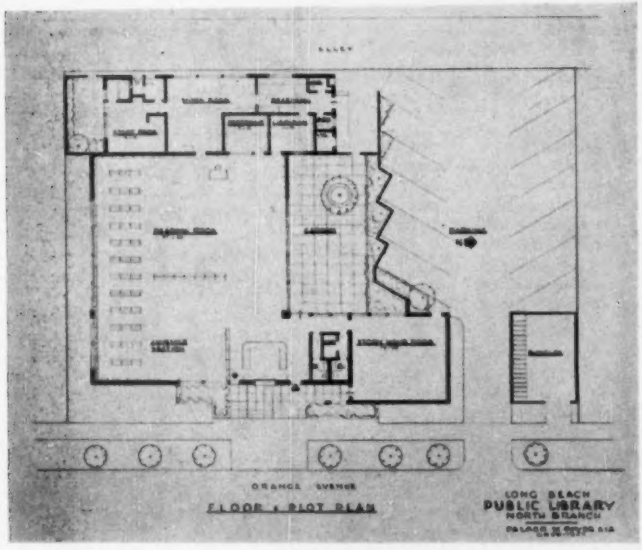
Covering 6,800 square feet, the building has a capacity of 35,000 volumes. It was constructed and furnished at a cost of approximately $111,000, including cost of the land.

Since librarians, like everyone else, learn from experience, the North Branch is better planned for efficient operation than the one completed

The attractive and inviting entrance to the East Long Beach Branch Library.

Good lighting and proper ventilation are evident in the Children's Section of the Long Beach North Branch Library.

This floor and plot plan of the North Branch Library shows how available space was utilized to the best advantage of both the members of the library's staff and the readers.



earlier. Officially opened in April 1951, it is an example of what can be accomplished when librarian, architect, and city engineer work closely at all stages of planning and construction. In this case the dramatis personae were Palmer W. Power, A.I.A., architect; Edwin M. Campbell, Special Projects Engineer; Miss Violet Sell, Branch Librarian; Mrs. Theodora Brewitt, former Long Beach City Librarian, and Edwin Castagna, City Librarian.

To meet the problem of noisy teenage conferences and yet provide for supervision, a small glass-fronted conference room was built next to the librarian's office. A specially constructed circulation desk provides handy space for registration files and photographic charging-transaction cards. High shelves near the exit of the workroom make the unpacking of daily book deliveries from the main library an easy chore. Steel and concrete bicycle racks and parking space for 12 cars solve two problems faced by most libraries.

Adjustable aluminum louvers, to be changed twice a year, control daytime lighting, and recessed troffer lighting, with 8-foot Slimline fluorescent tubes set with lenses flush with the ceiling, provide adequate light at night. An acoustical-tile ceiling and a heating and ventilating system which constantly changes air solved two other common library problems.

With neighborhood libraries increasingly serving as community meeting places for adult groups, the architect's plan for the auditorium was especially good. A separate wing houses this room and public rest rooms. During library hours the short hall leading to the auditorium is open and the rest-rooms available. After library hours, the wing can be locked off; and since there is a separate outside entrance to the auditorium, community groups are not restricted to library hours for its use.

A large picture window opening onto the patio is the only source of daytime light in the auditorium. When puppet-shows or film showings are held it is a simple matter to draw the drapes and darken the room.

Adequate behind-the-scenes workroom space and staff quarters were provided. Of special delight to the staff is a Murphy Cabranette, which is a single unit containing a three-burner electric stove with oven, sink, electric refrigerator and shelving for dishes.

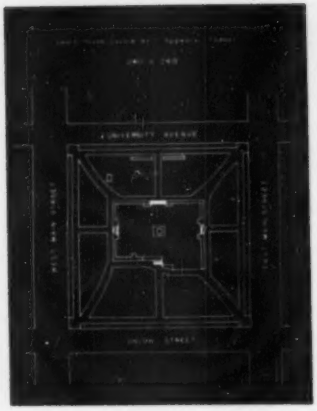
A one-page mimeographed sheet of information about the new branch has been prepared to aid staff members in answering the many questions asked by visitors and patrons about details of the building. Any reader of THE AMERICAN CITY desiring a copy of this may have it by addressing his request to the Long Beach Public Library, Long Beach 2, Calif.

THE ANNUAL INDEX

listing by subjects and by cities the articles and items published in *The American City* for the 12 issues for 1951 will be available without charge to subscribers for the magazine. Address requests to 470 Fourth Ave., New York 16, N. Y.

The Court-House Square or Village Green

By SAUNDERS A. KAHN
Community Consultant
New York City



MANY communities are blessed with charming village greens, civic centers, and court-house squares. There has been an increasing pressure to redevelop these areas in recent times. The court-house square, particularly, has been subject to considerable discussion. It has become a painful problem for several reasons:

1. In appearance many court houses are no longer attractive.
2. Many are functionally obsolete.
3. Increased population and governmental functions require more space than the buildings can offer.
4. Demand for centrally located land has increased.
5. General land usage must sometimes be corrected to meet altered economic needs.
6. A good deal of sentiment is associated with these centers.

There are really only two solutions available which can be accepted. Either the land must be redeveloped with new civic buildings or the civic buildings must be relocated elsewhere and the old site used for new purposes. It is necessary to consider other possible uses for the old land before deciding which alternative to accept.

Effect on Land Values

First of all, some misconceptions must be eradicated. In a series of surveys it has been found that neither the court-house square nor a downtown park has had an adverse effect upon retail shopping. Contrary to general belief, both have aided retail areas. Land values surrounding downtown parks and court houses have in most cases increased more rapidly than the average land in the city. This is true, except when:

1. The court house or park was deliberately located outside of any potentially high-value land.
2. Public and institutional buildings were immediately erected around the park or court-house square.
3. The community was designated as a county seat after it had shown other important growth.
4. There is a new major reason for community population increase far beyond its past record.
5. After high land values had been established around the square, the court house was relocated.

Of course, a court-house square will have a decreasing influence on land values after the city's population exceeds 75,000 or 100,000.

Precautions

In making the choice of future use of the square, several precautions must be taken:

1. Make the highest and best use of the square itself from a monetary and physical standpoint.
2. Maintain surrounding land values in ratios similar to those now in existence.
3. Provide for future growth of retail area.
4. Prevent additional vehicular traffic congestion.
5. Retain and broaden esthetic features.

Consideration would also be given to additional community services that would be needed by the new improvement. Would it be financially possible to provide these services? If the amenities received are important, the public may be more willing to support the improvement. The answer would be dependent also upon the ability of the improvement to sustain some of its own costs.

An example of maintaining the present ratios of land value of surrounding property can easily be shown. In some towns the old court house has no "back door." Identically styled entrances face all four streets. This has tended to prevent any one street from becoming more desirable than others (other conditions being equal). In planning a new use for the square, it will be considered unfair to change the existing balance. However, in many cases, it will be difficult to avoid doing so.

An improper improvement may also destroy the "natural" growth of the shopping center. Place a high school or armory here and a buffer against retail shopping will be established. On the other hand, use the site for some intensely commercial purposes, such as additional retail shops, and the shopping area will become more centralized. It would then prevent a spreading of the shopping district over a wider area.

Naturally, the traffic problem must be considered seriously. There is hardly a town that has not suffered from "hardening of the arteries." The streets cannot serve the increased needs of a growing population having more and more cars. In choosing a use for the court-house square, an attempt to alleviate the condition should be made. In any event, a heavy-traffic generator should not be permitted.

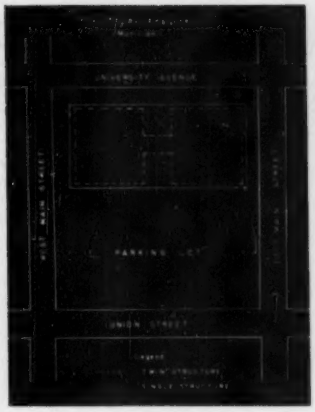
Having a court-house square or village green adds charm, grace, and character to a community. Esthetic features are important to civic pride, visitors' impression, and the well-being of a town. It is fundamental that any new use of the site should be considered on the basis of its effect upon the appearance of the city.

Now that an outline of complicated governing factors has been offered, it may be possible to measure the suitability of various uses.

A Proposal for Peoria

It might be interesting to discuss briefly a proposal made for the City of Peoria, Ill. A unique and complicated plan would create an office and store building on the court-house square. Part of the building would house the court and necessary county offices, while the rest would be business offices, retail stores, display space, and a subbasement area used for parking 500 cars. Involved legal problems may prevent this project from being put into effect.

These combined uses will certainly provide an economical use of the square. It should be noted from a practical viewpoint that the financial arrangements provide for the county to obtain free rent of the space they occupy, taxes from the commercially



used portion, and a building constructed without cost which becomes county property within approximately 30 years. (The economic life of the building should be 50 years or more.)

This improvement would tend to concentrate the shopping area in the central business district because of the retail stores planned for the street floor.

The building would attract a considerable amount of traffic, but the parking of cars in the sub-basement would probably take care of this situation. Unfortunately, this is not a complete solution. It still means that more cars will be attempting to get into and out of the central business district each business day.

A fine, imposing building can be erected on the site and it will be possible to make it a civic landmark. Naturally, the cost may be greatly affected if it becomes primarily monumental, instead of functional.

Serious consideration will definitely be given to this plan by many other communities throughout the country.

The first proposal that can be made would be to use the entire square for a small city park and an amphitheater for meetings and concerts. This type of utilization would be more often suggested in high-temperature areas than in northern regions.

Park and Amphitheater

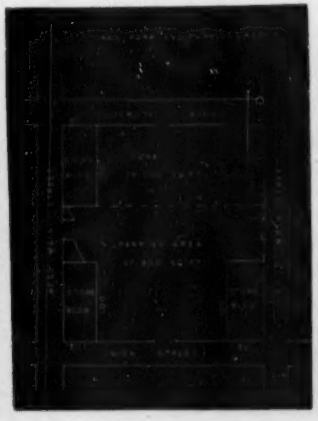
This would be a prominent beauty spot and give the community an excellent location for civic events and concerts. Naturally, this would be a traffic generator, but a careful scheduling of events could prevent any serious difficulty. A convenient parking area would also be necessary and it is often possible to provide the parking underneath this park.

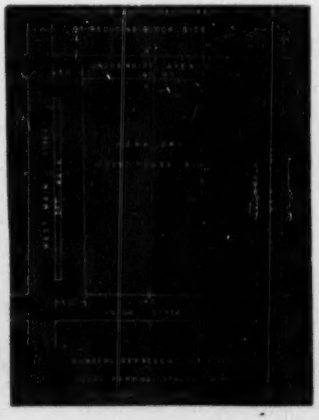
This type of use would aid to retain the present ratio of realty values on property surrounding the square.

However, placing a park and amphitheater on the court-house square will usually not be satisfactory financially. It will produce no revenue to the community and, instead, will cause an important capital outlay and regular maintenance. Furthermore, if the court-house square has been surrounded by the most concentrated shopping area, there is little justification to use it for park purposes. A park can afford many of the same amenities even if it is a few blocks away from the heavy-shopping area.

A second use for this land would be to construct a new court-house building, possibly with its own parking area. It might even be possible to make this a combination municipal and county office building. This would make government services more accessible to the general public. Again, it can be shown that this use will be a traffic generator despite the allocation of space for parking.

A modern building will improve the appearance of the community. Nevertheless, it seems that there is no need to have government agencies in the heart of the retail area. They must be accessible to the general public, but they can be a few blocks removed from





the main shopping streets. As a further factor, there is an indication that in a larger city, civic buildings tend to destroy retail shopping areas. This is due to the short hours of operation of the government offices and to the physical massiveness of the building.

City Park

We have previously considered the erection of a park and amphitheater. It might also be worth while to consider a park without the amphitheater.

A well-landscaped park with adequate benches, drinking fountains, and rest-room facilities would create an attractive and restful spot both day and evening. Paths through the park would furnish direct lines of pedestrian traffic for the shopper and therefore aid retail establishments.

This use would be subject to most of the same comments offered concerning the park and amphitheater combination. In addition, it would be a less intensive use of the land. However, it would not be a serious traffic generator, and would be more attractive than the park-amphitheater.

Commercial Use

Up to now, this article has dealt with public uses of the square with continued ownership by the community. Another possible method of effecting a tinued ownership by the community, of the land to private interests and allowing them to erect a commercial building.

Economically, this method would have several advantages. It would allow the block to be used in the most intensive manner. High real-estate taxes could be levied against the property.

The county would also receive a large sum of money, enabling them to find other land (less expensive) and help pay for a new building.

At the same time, the shops and real estate surrounding the square would benefit, for it would intensify the shoppers' need to patronize this area of the city.

Of course, the layout of this building might very well destroy present land ratios. If one side of the building had store windows and the other side shipping and service entrances, it is evident that this would have a major influence on surrounding properties.

In addition, an intensive commercial utilization would be a heavy-traffic generator. Possible commercial uses would include stores, offices, hotel, and theater in any combination. In general, this choice is often made for an immediate financial profit, but eventually this causes regrets.

In some communities, one of the streets passing the square is a major arterial road. In these cases, we have devised a special utilization for the square. It would consist of a combined retail, car parking, and park use, and would maximize the usefulness of the square.

One-story buildings would be erected at each corner. Between the two buildings on the main artery would be a compact park. The rest of the land would be used to park cars, with entrances to the lots between the stores on one or more of the other streets. The county could retain ownership of the property. The four stores would be of identical design and leased to private concerns to operate.

Corner lots have the greatest commercial value, and, therefore, this plan utilizes them in their highest and best use. The core of a block has the lowest value and this plan allocates this land to car parking, a comparatively low-caliber commercial use of land. Locating a small park on the main artery gives the entire square eye-appeal and charm.

Having the stores on each corner would also promote a pedestrian traffic flow across the square and thus prevent any tendency for the square to be a buffer against commercial activity.

The county would obtain important revenue from the store operators, and from parking fees. Its financial success is based upon the fact that each portion of the square is being used to the greatest advantage.

Furthermore, the costs of constructing these improvements are modest. It is always proper to consider that the planner is not able to prophesy all events. If he has erred, this use of the land would involve less risk of loss to the community.

Changing the Size of the Square

One other basic suggestion should be made concerning the size of the square. It is very possible that future needs will be for a different size block area. Little thought is usually given to changing the size of the block. Sometimes a portion of the block can be cut off and used for parking purposes.

The remaining portion of the block can often be better utilized in its reduced size. A new court-house building may become more imposing; a park would be less of a barrier if smaller; even commercial properties will usually find the shallower lot more suitable.

From a practical viewpoint, it should be evident that sentimental and political considerations will usually present stumbling blocks to an intelligent and practical decision. Legal involvements must also often be solved.

The problems discussed here are just a few to be considered in dealing with the court-house square. Similar conditions will apply to municipal buildings, city halls, and to a common or village green. It is rather difficult to effect major changes in the use of private property in the business center, but here we are concerned with public property. Certainly action is indicated. It is with these properties that city planners can readily exert their influence. How can we ask private owners to use their land correctly when so much public land is misused?

Oswego, N. Y., Mayor Donates Ambulance to City

Mayor Frank L. Gould poses with an emergency ambulance he purchased with his own funds for the City of Oswego, N. Y. The new ambulance was needed, in addition to the one already owned by the city, to meet the needs of the city's new 126-bed hospital and the rapid growth of the City and County of Oswego.

Equipment for Applying

Copper Sulphate to Surface Reservoirs

By M. B. CUNNINGHAM
Superintendent and Engineer Oklahoma City (Okla.) Water Department

OKLAHOMA CITY has two surface reservoirs—one of 1,700 acres (17,000 acre feet), and the other of 2,500 acres (75,000 acre feet), in which the raw water is stored prior to treatment at its two water-softening and filtration plants.

For controlling the plankton growth in our two lakes, and also the Sessile Algae growing on the rip rap, we have built a spray outfit for feeding copper sulphate solution. The equipment is mounted in an aluminum boat, 16 feet long, and with a 61-inch beam, propelled by a Johnson 10-hp outboard motor.

The spray equipment consists of a stainless steel pressure tank of 70-gallon capacity, with a fill cap on top, and a 1½-inch Gorman-Rupp construction pump of 15-gpm capacity, driven by a Briggs and Stratton gasoline engine. The distributor pipe is of 1½-inch to ¾-inch diameter, extending about 25 feet on each side of the front of the boat, with orifices spaced 2 feet apart, giving a total spread of application of approximately 60 feet.

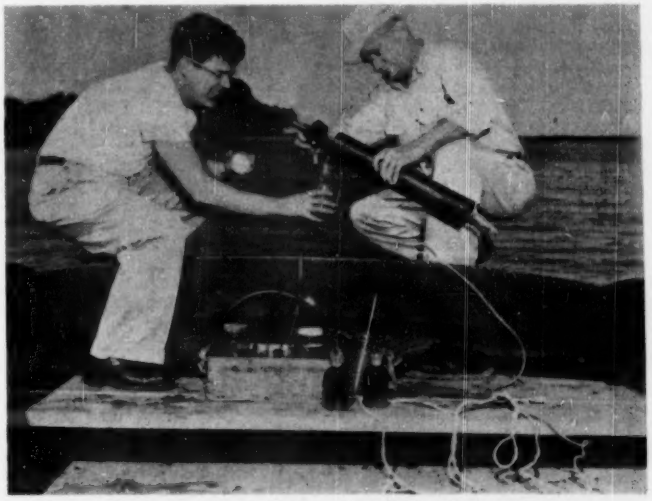
Operating Steps

For operation, 400 pounds of small-crystal copper sulphate is placed in the tank, the cap screwed on, and the pump, which takes its suction from the lake, is started up. Copper sulphate solution (controlled by the discharge valve) is forced out the discharge orifices. The boat is driven across the lake at right angles to the wind, spacing the paths across the lake until the desired area is covered. For limited areas, half of the distributor is used. The only trouble so far has been with sulphate corrosion of the aluminum boat. We are experimenting with plastic coating for protection of the metal surface.

Some spraying of the rocks themselves, above the water's edge, has been done, but the wind makes this activity very disagreeable to the personnel handling the equipment. Broadcasting of the small dry crystals over the rocks, which are later dissolved by wave action, has proved the most satisfactory method of application so far. This equipment has given us a much more uniform application of copper sulphate than the old method of dragging burlap sacks filled with the crystals alongside of the boat.

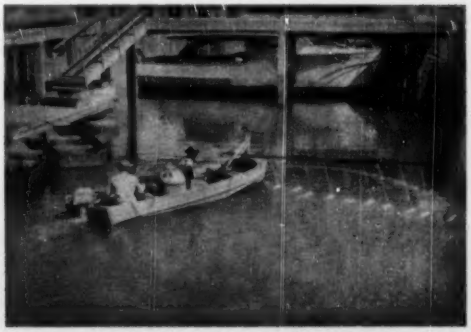
Weekly Sampling Schedule

Our laboratory technicians collect samples of water every week, in order to know when to apply copper sulphate, and also to check on the results of its application. Threshold odor determinations are run daily at the two water-treatment plants for over-all taste and odor control in both lake supply and treatment through the plants.



How many algae? This sample will give the answer.

If there is too much algae growth, eviction notices are prepared in the form of a hopper full of copper sulphate.



Bad news for algae is on the way—but it's good news for the people of Oklahoma City, who like taste-free water.

Two Little Communities Build Joint Sewage-Treatment System

Villages of Chisago City and Lindstrom, Minn., pool their resources and solve a sanitation problem that neither could handle satisfactorily by itself

By A. W. BANISTER
and
R. J. ELLISON
Banister Engineering Company
Consulting Engineers
St. Paul, Minn.

A VITRIFIED-CLAY-PIPE sanitary sewer installation, recently completed, stands as an excellent example of cooperation by two neighboring communities to solve a mutual problem.

When faced with problems of an inadequate sewer system and pollution of a near-by lake, the Villages of Lindstrom and Chisago City pitched in and worked out a highly successful answer.

Lindstrom and Chisago City are about three miles apart, and both are surrounded by lakes used for recreation. In some respects, the layout of Chisago City is like a large "T," the stem of the "T" varying in width, with a lake on each side of this vertical stem. Lindstrom could be described as a peninsula; it has a lake on the north and another on the south. About two miles east of Lindstrom the lakes are separated only by a short channel, making Lindstrom a part of what is almost an island.

The problem confronting the villages was one of sanitary sewers. Each village has a creamery which discharges its waste directly into the lakes. Both have water systems, and practically all residences have septic tanks. In parts of each village septic tanks did not function satisfactorily.

Through the years that the septic tanks had been used, the ground gradually became saturated, and the density of residences and business places had increased to the point where satisfactory results from septic tanks could not be obtained. The odor at times became very bad in the business districts. Many of the septic tanks used by residents of the lake-shore property overflowed directly into the lake rather than through an underground drainage field. Frequently, the overflow from the septic tanks spilled out on top of the ground, and in many instances the odors along the lake shore were extremely objectionable.

On numerous occasions small industries had come to each of these two villages to consider locating in them, but in practically all instances industries refused to settle in either community because there were no sewers, and it was questionable as to when sewers would be available. Each of the creameries was confronted with a waste-disposal problem, and neither could properly see its way clear to spend the amount of money required for the necessary degree of waste treatment.

Another problem confronting these two municipalities was the terrain, which made it difficult to provide a satisfactory sewer system at minimum cost, and still prevent sanitary sewage, in any form whatsoever, from draining into the lakes. The recreational value of the lakes to both Lindstrom and Chisago City is great. The lakes are probably the chief asset of both villages and are used very extensively throughout the summer months. Many former summer cottages have been converted to year-around residences, and the sewage-treatment-plant effluent could not be discharged into the lakes.

Both communities were confronted with identical problems, and it became apparent that while one sewage plant, for both would cost more than a plant serving just one, the cost would not be twice as great, and certainly the operation and maintenance of one plant would be considerably less than for two separate plants.

Surveys and estimates were made for a combined sewage-treatment plant and presented to both villages. The idea caught on immediately that a sewage-treatment plant constructed midway between the two would not only be cheaper, but also would be the most satisfactory method of keeping the plant effluent from any of the lakes. The effluent could be discharged into a slough and then into the Sunrise

Here is the plant that represents two Minnesota communities' solution to their sewage-treatment problems. Note the covered trickling filters at the right.

River, and finally into the St. Croix River, although a very high degree of treatment was still required. While the advantage of this program over discharging the effluent into the lakes was largely a psychological one, it met with favor and certainly was a permanent solution at least for the lakes.

Because of legal difficulties, each village built its own sewer system of vitrified-clay pipe, with each system discharging into the joint sewage-treatment plant. Because of further legal difficulties, one of the municipalities had to construct the sewage-treatment plant. Accordingly, each received bids on sewers, and Lindstrom received bids for the treatment plant and entered into contracts for construction in August 1948. Chisago City and Lindstrom then joined in a contract in which the cost of construction was to be split equally, with Chisago City paying an additional sum of $6,000 to Lindstrom for increased sewer costs necessitated by terrain conditions caused by the joint program.

Commission Organized

Although the plant legally was built by Lindstrom, with half the cost paid by Chisago City, the plant has been turned over to a commission known as the Lindstrom-Chisago City Sewerage Commission, which is composed of five men. Two of these men were appointed by Lindstrom, and two by Chisago City. The fifth member of the commission is a person mutually acceptable to both communities. After much discussion, the appointments made by each village were the mayor and village clerk. The fifth member of the commission is the health officer, who lives in one village and maintains his office in the other. The entire operation and control of the plant is handled by the commission.

The sewage-treatment plant provides a two-stage, high-capacity, trickling-filter treatment that discharges an effluent having a five-day BOD strength of 20 ppm or less. Two clay-pipe sewers enter the plant, one from Chisago City and one from Lindstrom. Provisions have been made for measuring the two sewages independently. The combined sewage then flows through a bar screen where the larger solid material is collected, and then through a rotary fine screen which screens the solids that do not pass a No. 10 mesh screen.

Liquid sewage is pumped to the first-stage trickling filter, which is constructed with Yeomans rotary distributors and vitrified-clay-pipe underdrains. The next step is provided by an intermediate settling tank of the rectangular type, containing Walker Process sludge collectors, which settles out the solids created on the first filter; the sewage proceeds to the second-stage trickling filter, then to the final settling tank, where the sludge is again settled out. From there it goes to a chlorination tank and then to Mud Lake, which is not used for recreation. The solids removed by the screen and the two settling tanks are pumped to a chemical-mixing tank, where ferric chloride is added, and the sludge is placed on sand drying beds, from which it is hauled away.

Cost of the sewage-treatment plant was $147,900. Each village paid a half, except for the previously mentioned $6,000 payment. The sewage-collection system of lateral trunks and lift stations cost approximately $150,000 in each village. Vitrified-clay sewer pipe was used in both cases because of its corrosion-resisting characteristics.

Financing

The finances were worked out in a rather unusual way. To provide construction money, each community issued $240,000 worth of bonds. These 20-year bonds sold in September 1948, at 2¾% interest rate. They were authorized by several referendum votes with majorities varying from 10-1 to 4-1.

Although the bonds are general-obligation bonds, the village councils do not anticipate local tax-rate increases. As planned now, bond interest and principal, treatment-plant operation and maintenance, and the collection-system costs will be financed by three revenue sources:

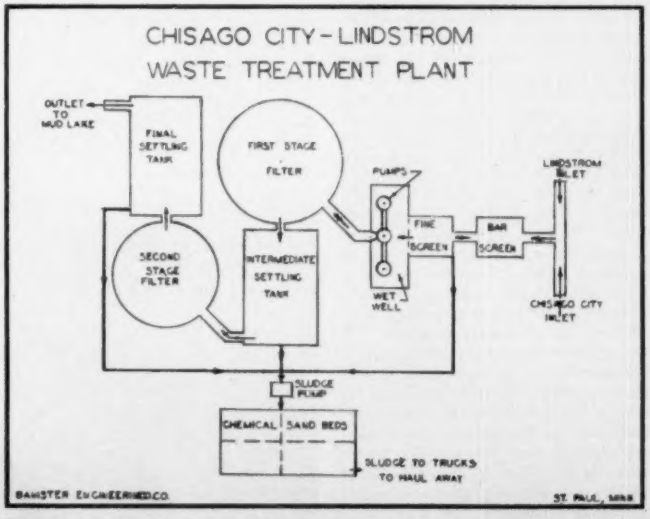
(a) Special assessments against abutting property
(b) Monthly sewer-rental charges
(c) Municipal liquor-store profits

The special assessment policy of each village is a flat assessment of $2 per front foot for construction of laterals. There is no charge for trunk sewers unless they are also laterals, in which case they are assessed at the regular $2 rate.

Residences will pay a $1.25 monthly sewer-rental charge; commercial establishments and industries will pay larger sums depending partly on the amount of their waste loads. It is expected at this rate (with approximately 175 residential connections in each municipality) that sewer rentals will produce about $3,600 annually for each village. This is somewhat in excess of the estimated $2,500 annual operation and maintenance cost for each. The margin can be applied to payments on the annual fixed charges of about $14,500 for each village. It can be seen from this that the special-assessment collections and the liquor-store profits are expected to carry the bulk of the fixed charges.

Can Be Enlarged Easily

The entire system lends itself readily to taking in the entire shore line of the lakes between the two villages even though they are not now in any incorporated limits. It is anticipated that within a very short time all of the summer homes and year-round homes on the lakes can have complete sanitary facilities through the farsightedness and mutual cooperation of a group of individuals who took the time and made the effort to settle a serious problem. Already two summer resorts and a number of the privately owned cottages have connected to the sewer system.



The plant was built according to this general plan.

Metropolitan Refuse Disposal Problems

How they are being met in various parts of the country

How they may be solved to insure good sanitation and low costs

REFUSE SANITATION in metropolitan areas faces one great, defiant barrier that often seems to throw the entire service into an unwholesome snarl. The refuse itself does not cause it; metropolitan-area refuse is virtually indistinguishable from rubbish produced from any other area. Nor is the barrier created by the physical problem of disposal; engineers can, without difficulty, design and build disposal facilities adequate to dispose of the refuse without nuisance and at not too great a cost.

That barrier is created by the minds of the people. It is artificially imposed. It is based first on an undue pride in local community boundaries and secondly on unjust prejudice against the construction of adequate disposal facilities.

Municipal Boundaries Hard to Hurdle

Often a community needs to suffer to a near disaster before it will subordinate political boundaries to a metropolitan-area solution of public-works problems. In water supply, the fear of some dreaded water-borne disease will make us forget those boundaries. In sewerage, the sight of a beautiful river, fouled virtually beyond redemption and destroyed for recreational purposes, will cause action. In refuse sanitation, we have not yet reached this close to disaster. What we need, say some, is a "good" plague of some sort traced to inadequate refuse-disposal facilities. In other municipal services we have seen these boundaries passed over when the need for the service was great enough. The Boston Metropolitan Water District is one example. The Los Angeles Board of Water and Power is another, and in this case one that overcame inconceivable handicaps of state boundaries and a great mountain range. In the case of sewage treatment, we find great rivalry such as exists between Minneapolis and St. Paul halted so that these two cities can build treatment facilities. The joint handling of this sanitation service has become almost commonplace in New Jersey, where many cities in the New York metropolitan area have banded together to solve this sanitation problem.

Today the practice in metropolitan areas seems to be one of restricting refuse activities to the municipal boundaries of the parent city and satellite communities; however, some examples exist that show how these boundaries are being erased.

New York City Area

New York City's metropolitan area, for example, follows no uniform refuse-disposal pattern. The area is split not only by village, town and county, but also by state boundaries, and is forced to overcome the natural barriers of three rivers and Long Island Sound. New York City itself handles its own collection and disposal of refuse and uses both incinerators and the sanitary-landfill methods. The city, commendably enough, does not tolerate the insanitary open dump.

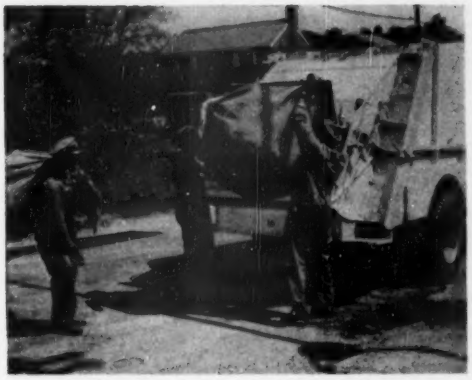
New York City's Long Island suburb, Nassau County, has freed itself of open dumps also, principally through various county-wide regulations. Thus the county becomes an enforcement agency and the cities, towns, and villages comply by building refuse-disposal facilities to meet the county specifications. Nassau County does not tolerate the sanitary landfill even for the disposal of decayable food-wastes and, instead, is an "incinerator" county. In Westchester, the county takes no such active interest in this phase of sanitation, but does maintain a fill area near Croton where municipalities can take their refuse for disposal. This is at a remote point, screened by trees so that it is not visible, and some communities haul the refuse for great distances in order to get rid of it here. However, it scarcely can be considered a landfill and is instead a fairly presentably open dump.

In that portion of New Jersey that lies in Metropolitan New York, the problem has become acute only recently. In the past, various boroughs have been able to pass ordinances prohibiting refuse dumping within their borders, but the growth of Bergen County is catching up with this policy, and very few dumping areas are left. So the county is attempting so solve the problem by establishing sanitary-fill areas in the salt-marsh wastelands and other locations that will at least provide a disposal place for the trash that will meet sanitation and nuisance-abatement standards. Possibly incinerators will also be built in the future as a county measure.

Washington, D. C., Divided Into Districts

Washington, D. C., is another metropolitan area peculiar to itself. The city itself cannot enlarge its borders without permissive legislation by the Congress as well as adjoining state legislatures and a rewriting of state boundaries. No other city in the nation faces such insurmountable barriers to expansion. Thus the disposal of trash quickly becomes one of awe-inspiring importance, involving interstate commerce regulations as well as the problem of maintaining friendly relations with

Sanitary fills in Los Angeles County, Calif., are not operated by the county itself, but are subject to county supervision and regulations nevertheless.



The Washington Suburban Sanitary District has uniformed crews using covered Gar-Wood collection trucks.

New York City operates incinerators and sanitary fills; note the earth dyke that confines the fill operation.

other states. One can envision the tremendous number of judicial hurdles that would have to be overcome in order to decide whether cast-off food scraps were Maryland, Virginia, or District of Columbia wastes.

The area has divided itself naturally into disposal districts by states. One is the Washington Suburban Sanitary District, lying entirely in Maryland, and taking for its responsibility the services of water supply, sewerage, and refuse disposal. Another is in Arlington County. This small Virginia county, for all intents and purposes a municipality, supplies the services that are needed in the Virginia area. Washington proper is supplied its refuse-disposal facilities by the District government.

Detroit

Detroit is a metropolitan area whose handling of refuse indicates thought and progress. The city itself has pursued an aggressive policy of supplying adequate incineration facilities. Nearby Dearborn, for many years, enjoyed the convenience of turning its refuse over to the Ford Motor Company, which hopefully tried to process it for use in the manufacture of cars. Then one day, when the present generation of Fords took charge and examined the cost accounts long enough to see what an expensive, unfruitful experiment it was, Dearborn found itself with its garbage back on its hands again. The city now makes extensive use of grinders and encourages the use of household and commercial grinders. It handles its refuse problem independently of other communities in the area.

Elsewhere in the Detroit area, we find groups of satellite cities banding together to build incinerators and dispose of their refuse. One newly formed district is the South Oakland County Garbage and Refuse Authority, which embraces nine cities. The logic of incineration can be seen by the fact that the sanitary landfill would have required at least 300 acres of ground for a 20-year period and no such area is available. If it were available, its cost probably would be between $1,000 and $5,000 an acre. A second group of cities in this area, the Down River Authority, is in the process of forming.

Incidentally, little Highland Park, Mich., entirely surrounded by Detroit, maintains its own incinerator. It willingly shoulders the cost of trucking its incinerator residue many miles to a point beyond the Detroit limits in order to operate its refuse service as an independent community.

In California, city limits expand more easily, particularly in Los Angeles, than they appear to do elsewhere. Nevertheless, Los Angeles has both a city and a county government supplying these services. People in these West Coast cities, incidentally, do not insist on the same high standard of service as is required in other metropolitan areas. The collection of garbage, tin cans, and bottles alone seems to suffice. The rest of the refuse is burned in little backyard incinerators. Periodically the city tries to enlarge this service but has had no support from the people. The health authorities are not at all encouraged by the smoke that these backyard burners produce to complicate Los Angeles' smog problem further.

Los Angeles Dumps Eliminated in 1948

However, in 1948, the Los Angeles County Board of Supervisors inaugurated a program that at least did away with the burning dumps that produced their attendant nuisances and health hazards. Since much marginal land still exists in the county, the sanitary-fill method was practical. Those who operate the dumps must obtain permits and must operate them subject to careful inspection and supervision by the county. A report delivered by A M Rawn, Chief Engineer of the Los Angeles County Sanitation Districts, recommends that a county-wide program of refuse collection be instituted. No political or natural barrier stands in the way.

Summary

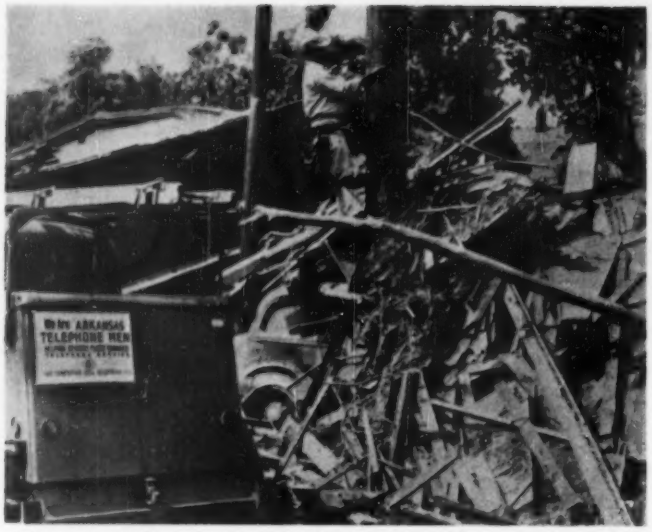
Certain fundamentals of good practice seem to stand out and offer guidance to metropolitan areas. These might be summarized as follows:

1. The governing body of the area, whether it be county or township, should prohibit the dumping of refuse in a manner that produces a health hazard or a nuisance — successful in Nassau County, N. Y., and in Los Angeles County, Calif.

2. The governing body of the area should supply approved disposal facilities, whether they be sanitary fills or incinerators, if adequate collection services are available in the area—used in Westchester County and Nassau County, N. Y.

3. If existing collection facilities are unsatisfactory, then the suburban area should incorporate this service into some existing sanitation organization, such as a water or sewer authority if such exists—successful in the Washington Suburban Sanitary District, and contemplated in Los Angeles.

4. If this is impractical, then the county should encourage cities or groups of cities to form authorities to build and operate incinerators or fill areas—successful in the Detroit metropolitan area.



A lineman quickly restores service, though flood wreckage surrounds the pole.

The Telephone In Civil Defense

By HAROLD S. OSBORNE
Chief Engineer
American Telephone and Telegraph Company

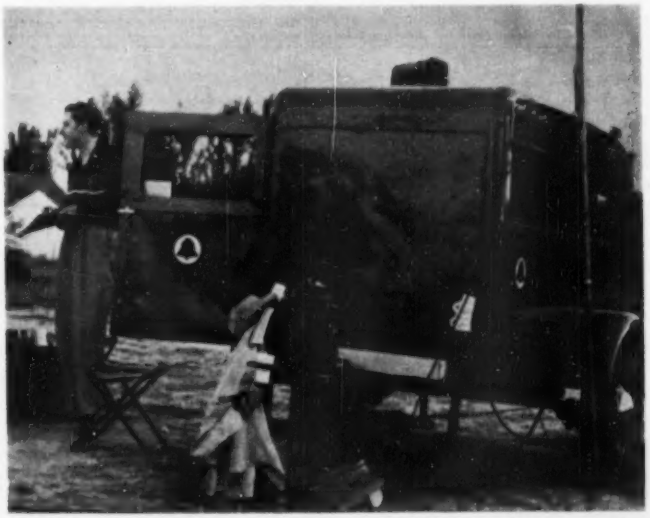
New plans and reserve equipment strengthen Bell System as bulwark for local and long-distance communication in disaster

DISASTER is no stranger to telephone companies. There are perhaps ten to twenty major emergencies each year resulting from hurricanes, floods, ice storms, and other natural causes.

Take a look at one of them. Only last summer, when the skies over Missouri and Kansas opened up and unloaded countless tons of water into the already swollen Kaw and Missouri rivers, disasters struck. Silt-laden waters engulfed two million of the nation's most fertile acres, forced more than a half-million people from their homes, and the loss in dollars topped a billion.

More than 37,000 telephones in the area went dead. Before the flood had reached its crest, telephone men from several states converged on the troubled area. Disaster agencies were first on the list — anywhere they needed service they got it, on the double, and in increasing amounts. Planes brought telephone operators from as far away as New York, Chicago, and Louisville to help.

Western Electric Company, the Bell System's manufacturing and distributing branch, started repair supplies flowing toward Kansas from distributing houses in Philadelphia, Newark, Dallas, Boston, St. Louis, Denver, Pittsburgh, Chicago, San Francisco, Washington, and New York. Work went on night and day as the army of telephone people fought to restore service. Telephones were working again in many homes while river fish still swam in the basements. Even with waters still rising, hundreds of emergency lines were put



Mobile radio-telephone-service facilities are available to disaster agencies. Here a mobile radio-transmitter trailer at Abilene, Texas, maintains communication between the Kansas flood zone and the Southwestern Bell offices.

back in service and in 12 days 22,000 telephones and 412 toll circuits were working again.

Plans have long been in effect in all important areas to expedite the rapid restoration of service after such disasters. Providing telephone service to any isolated essential agency is always the first step—and it's done quickly. These plans are kept up to date constantly. They can and do incorporate measures which fit the plans of civil-defense agencies.

Consider first communications within a large city. While the amount of communication service required by disaster agencies is assumed to be large, it would appear to be relatively small in comparison with the vast amount of communication service given daily under normal conditions.

In typical cities, large and small, which are rated as prime targets, about 80% of the cable wire is underground. Experience in Hiroshima showed that for air-burst atomic bombing the underground cables will not be destroyed except for a small area around ground zero. High-explosive bombs exploding under the earth may, of course, destroy the cables in small areas. However, such damage would be purely local and would not destroy the usefulness of the cables for closely adjacent areas which have not been hit.

Re-routing Essential Calls

Using the subterranean web of wires which underlies most prime target cities, the large force of trained telephone personnel can quickly route essential calls around a blasted area where facilities may have been disrupted. As an added precaution, advance arrangements can be made by civilian-defense authorities to have special circuits from selected control points to two or more central telephone offices in different parts of the city. Under those circumstances, control points would be less likely to be isolated.

If communication service to a zone-control center should be temporarily interrupted, it can be connected immediately, pending completion of repairs, into the telephone network by the use of Bell System mobile telephone service. The system provides general mobile service to some 11,000 motor vehicles associated with about 240 radio channels throughout the country. The service is provided in 47 of the 51 critical areas served by Bell companies and is now proposed in the 4 others. All these mobile stations have access to the Bell System network. About 1,000 of these vehicles are telephone-company cars. Others are operated by utilities, transportation companies, police, and other vital organizations. Many of the stations are already devoted to emergency work, and all the facilities could be used as needed by disaster agencies.

In dial-switching offices, the telephone companies have set up procedures whereby emergency calls under disaster conditions will take first priority.

There are a number of other factors which reduce the likelihood of service interruptions and shorten restoral time. For one thing, telephone buildings are constructed more substantially than most business structures. Furthermore, telephone buildings supplement their normal power supply with batteries having capacity to run the whole normal volume of telephone communication for periods ranging from two hours up to several days. Buildings where batteries have short-time capacity are equipped permanently with supplementary sources of power, usually generators driven by gasoline or diesel engines. For the smaller offices, portable power generators are available. The use of emergency plants is a regular part of telephone operations. For instance, the big blow in eastern seaboard states in 1950 interrupted the normal power supply at 450 central offices, but not one went out of service because of power shortage.

Experience indicates that good performance of telephone facilities and personnel under disaster conditions may be expected. For example, in the Texas City explosion in 1947, a large part of the industrial area was destroyed. While a great many telephones were knocked out, service was not interrupted to any essential agency. In fact, emergency facilities were rapidly set up to handle thousands of extra calls to the Red Cross and other relief groups. Communications to the outside world were also uninterrupted.

The great reservoirs of equipment and trained personnel available for disaster communication in large city areas apply with increased force to inter-city service.

The country is covered by a network of large-capacity telephone routes which have great flexibility to provide communication between any two points if normal routes are interrupted. Destruction at any one point would be like throwing a pebble through a tremendous spider web.

Expanding Radio Relay Routes

Particularly where coaxial cable and radio relay have been installed, the basic capacity of main routes is very large. With the new coaxial transmission-system equipment now being developed, capacity of present cables will be trebled to 5,400 circuits for each 8-tube coaxial cable. If the main radio-relay routes are used entirely for telephony, each would provide about 3,000 talking paths. These cross-country speech highways follow widely separated routes. For instance, there are now seven independent routes connecting the eastern part of the country with the Pacific Coast.

For a nation-wide service as well as for intracity communications, the Bell System has the advantage of a tremendous reservoir of trained men and large stores of spare material. The 160,000 trained plant men, of the System companies only, are situated in 8,300 different locations. They include 30,000 supervisors who are also well trained in plant work. Large stores of material, necessary for the normal program of expansion and rearrangement of telephone plants, are available at major warehouses of the Western Electric Company, from coast to coast. These are supplemented by large numbers of telephone-company stock rooms scattered throughout the country. At present, the stock of materials at all storage locations totals almost $200,000,000.

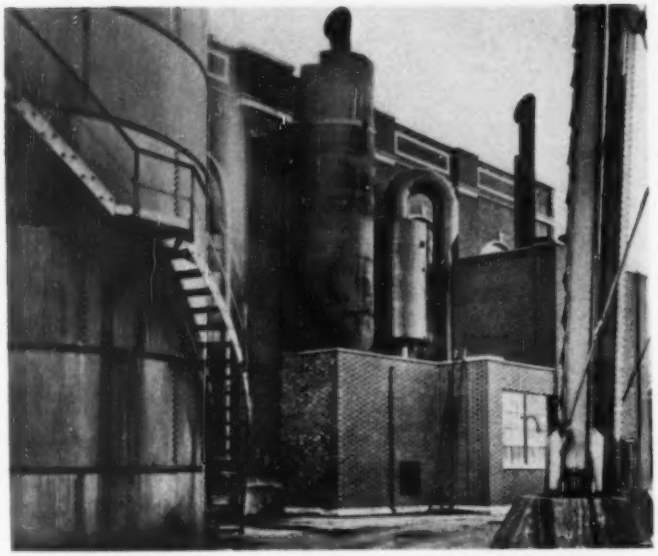
Emergency Units and Portable Microwave Equipment

Extensive provision has been made for the use of point-to-point radio as an emergency service when this is found helpful. The emergency radio equipments of the telephone companies number about 100. They are mounted on trucks, have their own power supply, and are often dispatched in advance of actual damage to points where a severe storm is expected. They are manned by people trained and experienced in this work. Bell System mobile service, mentioned before, also is available to assist in intercity service.

Another form of radio equipment which is available for rapid restoration of damaged telephone plant is portable towers and microwave radio equipment. A 200-foot portable tower can be erected and operation established in a few hours, where radio relay stations may have been knocked out. A number of these emergency units are now available and more are being procured.

In the potential target cities, telephone companies are building alternate long-distance central offices from which calls may be fanned out to distant points should the existing main toll centers be knocked out. At the present time, plans of this general nature, designed to provide for the continuation of an important fraction of long-distance service in the event of the destruction of the main toll offices, are under way in all of the metropolitan areas in which this form of treatment seems most important. Studies are under way to expand this program to take in all the cities designated by the Federal Civil Defense Administration as prime targets.

Diesel Efficiency At Rockville Centre



Air for the 3,850-hp engine is drawn through an intake silencer and air filters in a brick filter house. Exhaust gases pass through a vertical silencer. The large brick enclosure at the right houses the 3,000-hp engine's exhaust silencer, which is arranged so that waste heat is recovered for other uses.

New 3,850-hp diesel returns 14.33 kwhrs per gallon of fuel and leads 15,180-hp municipal plant to new efficiency peak

By C. P. KETLER
Commissioner of Public Utilities
Rockville Centre, N. Y.

THE Rockville Centre municipal power plant is today getting more diesel power out of a gallon of fuel than ever before in its history. A major factor in this achievement is the performance of a new 3,850-hp Nordberg diesel which went into service December 19, 1950. By February 28, 1951, the close of the 1950-51 fiscal year, the new engine had run 909 hours, generated 1,622,000 kwhrs and consumed 113,213 gallons of fuel, an average of 14.33 kwhrs per gallon. This was accomplished at an average load of just 65.6% of capacity.

Engine Efficiency

But new engines are part of the story. The older prime movers also have been able to improve their efficiency down through the years. For example, the 2,865-hp McIntosh & Seymour diesel, installed in February 1933, generated 2,287,600 hp in its first full year of operation at an average of 12.5 kwhrs per gallon of fuel. In 1950-51, the same engine produced 7,529,200 kwhrs for an average of 13.05 kwhrs per gallon.

This Long Island suburb started power production in 1898 with a small steam plant. In 1928 the obsolete steam plant was replaced with three 4-cycle air-injection McIntosh & Seymour diesels, one rated at 825 hp, and two at 1,250 hp. A third 1,250-hp unit was added in 1930; a 2,865-hp diesel of the same make in 1933, and another 2,865-hp unit in 1937.

The next significant change came in 1942, when the village put into service a 3,000-hp, two-cycle, mechanical-injection Nordberg diesel engine in place of the 825-hp unit. In the 8½ years from this installation date to the close of the 1950-51 fiscal year, this engine produced 68,315,900 kwhrs. Fuel consumption averaged 13.71 kwhrs per gallon for seven consecutive years. With this engine in operation, the plant topped 13 kwhrs per gallon.

Rockville Centre, like other communities in the New York suburban area, has been growing rapidly. An equally important factor in load development has been the increase in consumption per account. In 1935-36, the average residential consumer used 926 kwhrs; in 1945 he increased his purchase to 1,453 kwhrs, and to 2,061 kwhrs in 1950-51. Television alone has raised the electric department's income $70,000 a year.

From 1948 on, the load exceeded the plant's firm capacity. In other words, the plant could not carry its peak without its biggest engine. In fact, the load came very near actual plant capacity with *all* engines in operation. Obviously plant expansion was essential. Of special note is the fact that this plant has generated 100% of its requirements since the inception of its diesel program in 1928.

Engine Recommended

Official recommendations were made to the Board of Trustees on January 27, 1949, that a new engine be acquired. It was in operation on December 19, 1950.

The new Nordberg engine is identical to the 8-year-old 3,000-hp engine in its essentials, except that it has nine cylinders instead of seven. It is a two-cycle mechanical-injection diesel developing 3,850-hp at a moderate 225 rpm. It conforms to the village's preference for heavy-duty, slow-speed engines. Though considerably faster than the 164-rpm diesel it replaced, the new unit's 225 rpm is still moderate by modern standards. Striking evidence of the advance in diesel design is the fact that the 3,850-hp engine fits easily into the space formerly occupied by a 1,250-hp unit.

Fuel economy has been a crucial

matter for Rockville Centre during the post-war inflationary period. Officials of the municipal utility recognized a dual responsibility: first, to keep electricity rates down; second, to continue the contributions of cash and services that serve to reduce village taxes. Both these objectives have been attained. Rates charged the residential consumer have not been raised and remain lower than any private-utility rates in the county. Contributions of cash and services to the village exceed $100,000 a year. In the past five years, contributions have totaled more than $616,000; of this sum, $260,000 was in cash.

Lube-Oil Handling Differs with New Unit

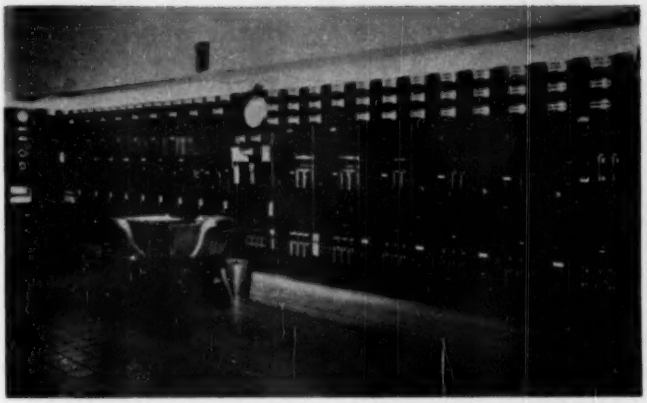
In lubricating-oil handling, the new engine differs from the 3,000-hp unit in that there is no engine-driven pump to circulate oil for bearing lubrication and piston cooling. Instead there are two identical 360-gpm pumps driven by 25-hp motors. One pump handles the engine adequately, while the other serves as a standby and is arranged to start automatically if lubrication-oil pressure fails.

Every precaution is taken to keep the lube oil free of contaminants that might harm the engine. The circulating pump draws oil from the sump tank and puts it through a strainer, a cooler, and a magnetic filter before sending the lube oil to the engine. The magnetic filter eliminates any metal particles. In addition, there is a small motor-driven pump which draws oil from the bottom of the sump tank, puts it through an 18-cartridge cellulose filter, and sends it back to the sump. There is a separate mechanical lubricator for each cylinder. In its first 909 hours of operation, the new engine consumed only 417 gallons of lube, an average of 8,392 brake hp-hr per gallon of lube.

Cooling Tower Easily Takes Added Load

Rockville Centre's unusual cooling tower was more than adequate to take on the added load of the new engine. This tower is an old standpipe erected back in 1895. Sections have been cut in the sides to permit atmospheric cooling. Red-wood filling and distributors and a two-speed, motor-driven induced-draft fan have been installed to provide a highly flexible cooling tower with great capacity. Addition of the 3,850-hp Nordberg engine required only the expansion of pumping capacity.

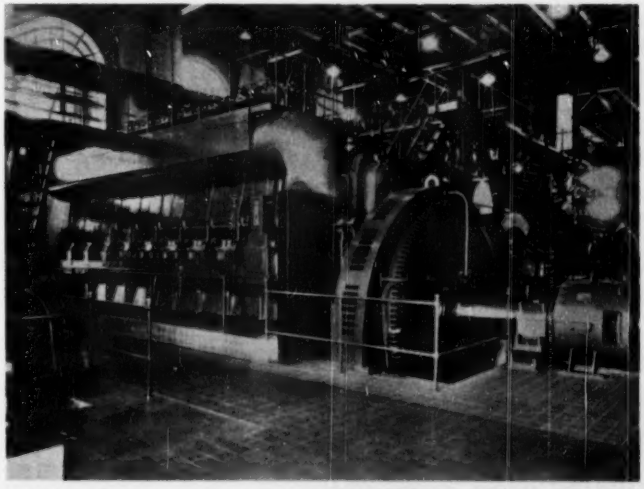
Air for the engine is drawn through an intake silencer and a battery of filters of the viscous impingement type. Air goes then to an engine-driven blower of 18,000 cubic-feet-per-minute capacity, then through the intake header to the cylinders.



In this photograph is shown the big General Electric switchboard which is set in an alcove with a room behind for easy servicing. Rockville Centre had a new voltage regulator installed in order to handle the new diesel engine.

In the previous installation, provision was made for utilization of heat from the exhaust. Two of the old engines were equipped with waste-heat boilers and the 3,000-hp engine's exhaust silencer was enclosed in a brick housing with a motor-driven blower to send exhaust-heated air into the plant during the winter months. The heat balance of the plant was such that no further waste heat could be utilized profitably and so the new engine exhausts through a vertical silencer with no provision for heat recovery.

Part of the plant's success must be attributed to the close coordination of operating and policy-making personnel. Chief plant engineer W. E. Van Deusen is to be especially commended. Not only are we fully conversant with the day-to-day operating problems of the plant, but we maintain a close liaison with village officials who traditionally have fostered sound, long-range development. Mayor W. Harry Lister and Trustees Henry S. DeMott, Julius C. Behnke, Joseph Huber, and John A. Anderson were instrumental in establishing sound policies of power generation and distribution.



This new 3,850-hp Nordberg diesel brings Rockville Centre capacity to 13,080 hp. It fits easily into the space formerly occupied by the 1,250-hp unit.

Plenty of Room for Expansion

Water-treatment plant for Tyler, Texas, can handle 6 to 10 million gallons of water per day, with high-rate filtration — and plant capacity can be enlarged easily without disrupting service

By ORMOND A. STONE
Forrest and Cotton
Consulting Engineers
Dallas, Texas

DEEP in the heart of East Texas, the City of Tyler has succeeded in retaining the atmosphere of pleasant and easy living which is generally associated with the Old South. Yet, the progress and development of the city—which the last census listed as having a population of 38,864—has been steady and orderly. Even the depression years of the 30's had little noticeable effect on the city's natural and healthy growth.

No doubt, the same civic leadership that has managed to accomplish such municipal progress while preserving the natural charm of the city's environment deserves much of the credit for Tyler's present enviable position with respect to its water supply. Whereas the drought and unprecedented heat experienced in a large part of the state during the summer of 1951 brought belated realization to far too many Texas cities and towns that they no longer could postpone action in remedying inadequacies in their water supplies and distribution facilities, it found Tyler completing a $2,500,000 water-works improvement program, begun three years previously in anticipation of its future water needs.

Impounding Reservoir

In April 1948, Tyler awarded a contract for the construction of a dam to impound the waters from a 45-square-mile watershed at a point approximately 10 miles southeast of the city. Lake Tyler, the name given to the reservoir thus created, has a storage capacity of 43,000 acre-feet at spillway level, and a surface area of 2,400 acres. It is the city's new supply to supplement Lake Bellwood—a small reservoir of 1,770 acre-feet capacity and a 5.0 square-mile catchment area located within the corporate limits—and five deep wells which were drilled between 1937 and 1944 in an endeavor to keep abreast of the city's increasing demands for water. The Lake Bellwood filter plant has a nominal capacity of 2,650,000 gallons per day, and the operating wells are good for about 3.5 mgd.

Following the award of the Lake Tyler Dam contract, which included the construction of a raw-water pumping station structure and intake tower, plans were prepared and contracts awarded for furnishing and installing the pumping, mechanical, and electric apparatus needed to equip the raw-water pump station, and for laying a 27-inch-diameter raw-water transmission line, some 8 miles in length, to deliver water from the lake to a new water-treatment plant proposed to be constructed in the rapidly developing southeasterly section of the city.

The flash mixer goes to work.

Plans for the new plant were finished in July 1950. With the exception of a wash-water tank and the high-pressure pumps themselves—with their appurtenant piping—they called for the construction of a water-treatment works and main pumping station complete in all other details. The wash-water tank and pumps, it was decided, could be handled best under separate contracts.

No, this is not a pioneer outpost with slotted windows for firing at the enemy. It is the raw-water pumping station at Lake Tyler, situated eight miles from the city's filter plant.

As prepared, the plans embraced three major construction items. They were: a combined flocculation and sedimentation basin; a 2½-mg circular, reinforced concrete, roofed reservoir to receive and store filtered water, and a main building housing a chemical wing, laboratory and office, chlorine scale and feed rooms, high-pressure pump pit and suction well, lavatory and locker room, and four filter beds with appurtenant pipe and operating galleries.

All mechanical equipment, connecting pipelines, and electrical apparatus and wiring (including that required for the installation of the high-pressure pumps) necessary to make the plant an integrated operable unit were made a part of the job, as was certain grading, paving, curb, gutter, and retaining-wall construction.

Lump-sum proposals were requested for the work and four bids ranging from a low of $632,000 to a high of $660,570 were opened on August 22, 1950. Lippert Brothers, Incorporated, of Oklahoma City, were low bidders and were awarded a contract early in September. Actual work on the project was begun in October. The job took just about one year to complete.

Flexibility Stressed

The design of the plant generally adheres to conventional practice. The filter beds are not covered, to be sure, but in a climate where heavy freezes are unknown there seemed to be no valid reason why they should be. The combined flocculation and sedimentation basin is perhaps a slight departure from the usual, but since the turbidity of the water to be treated was expected only to average about 19 ppm—with a maximum of 50 ppm—the Dorr Clariflocculator specified appeared to offer many highly desirable features. It has a nominal rating of 6 mgd, but may be operated at rates up to 10 mgd with

The Clariflocculator puts the plant's main building in an appropriate setting.

The Clariflocculator is expected to prove particularly effective with the water at Tyler. The 48-inch settled-water pipeline is in the foreground.

entirely acceptable results. Throughout the design, stress was laid on the importance of providing latitude for flexibility of operation and making allowance for future enlargement with the least possible disruption of service.

Flow of raw water to the plant from the raw-water pump station, located eight miles distant at Lake Tyler, is controlled from the plant office by means of Westinghouse "Visicode, Jr." supervisory-control equipment installed as a part of the treatment-plant contract. This apparatus permits the filter plant-operator to start and stop the raw-water pumps as needed to meet requirements without the necessity of having a man constantly on duty at the Lake Station. Wire connection between the two stations is furnished by the telephone company.

Feeding the Chemicals

As the raw water enters the plant for chemical dosage, the rate of flow is measured by a Sparling meter and registered on a dual-faced, town-clock type of indicator suspended from the laboratory ceiling. An open-top rectangular concrete conduit set into the floor of the chemical-feed room conveys the raw water lengthwise along the east exterior wall of the room to a point where it diverts to the flash-mixer chambers outside the building at its southeast corner. Three scale-mounted, volumetric type, Omega dry-feed machines are installed in the chemical-feed room in a line parallel with the center line of the raw-water conduit, and space is provided for the future installation of a fourth. One machine may be used for ferric sulphate if desired. Chemical feed is made through short pipelines which are exposed in the basement below the chemical-feed room and may be readily disassembled for cleaning. Lime may be fed either before or after the raw water enters the flash mixer or may be injected into the settled water after it has left the Clariflocculator and is headed for the filters.

The chemical wing of the main building rises three stories above road grade at the rear, or north, side of the building. Chemicals are received at a loading dock at basement level and are raised for storage on the third floor by means of a Nordyke service elevator or sack lift.

The length of travel of the raw water between the flash mixers and the Clariflocculator unit was kept as short as possible. The layout plan provides for the addition of a second unit at some future date and pipe connections were laid accordingly. An overflow weir is built into the Clariflocculator outlet box and is connected by pipeline with the main waste line from the filters. The diameter of the basin is 110 feet and its outside wall has a side water depth of 13½ feet. The diameter of the inner basin, in which flocculation takes place, is 50 feet.

A 48-inch-diameter pipe transports the settled water to the four filter beds arranged two to each side of a center gallery. Provision is made in foundations and piping so that four additional beds can be added as an extension when the need arises.

Filters

The filter beds are of the front-gullet type, each bed measuring 22 feet in width and 24 feet in length. A 20-inch-diameter cement-lined cast-iron underdrain lateral header extends lengthwise down the center of each bed. Underdrain laterals are 4-inch-diameter, cement-lined, cast-iron pipe installed on 12-inch centers. Lateral openings are brass-brushed eyelets having an internal diameter of 15/32 inch. The ratio of orifice area to bed area is .0024.

Filter piping is such that it will permit operating the beds at rates as high as 4 gallons per minute per square foot of filter bed. Wash-water piping will accommodate wash rates up to a 36-inch rise per minute. A Palmer surface-wash unit is installed in each bed. A Sparling meter placed in the main wash line registers the rate of wash being used on a dual-face town-clock type of indicator suspended from the operating gallery ceiling. Rate-of-flow control valves and operating tables were furnished by Builders Iron Foundry. Each bed is accessible on three sides from concrete walkways.

A 30-by-30-inch venturi tube is installed in the discharge line from the high-pressure pumps just outside the building with its recorder located in the plant office.

Three Wallace & Tiernan chlorinators are set in a room walled off from the space given over to the plant office and laboratory, but a 5-foot-square fixed plate-glass window set in one wall makes the machines fully visible without the necessity of entering the chlorine-feed room. Chlorine may be fed either to the incoming raw water or to the water entering the high-pressure pump-suction well from filtered water storage. A Wallace & Tiernan chlorine-residual recorder is also a part of the control equipment located in the plant office. The level of the water in the filtered-water storage reservoir is shown on a Foxborough gauge adjacent to the plant operator's desk in the laboratory.

A 30-inch-diameter pipeline connects the filtered-water storage reservoir with the pump-suction well in the pump pit. The pump pit proper is 38 feet wide and 48 feet long and has its floor 23 feet below the level of the filter-gallery operating floor.

G. D. Fairtrace is City Manager of Tyler; J. P. Ferrill is City Engineer; and Clarence Stewart is Water Superintendent. Forrest and Cotton, consulting engineers of Dallas, Texas, were retained by the city to design and supervise the construction of the waterworks improvements.

WINSTON-SALEM AND FORSYTH COUNTY

Joint Planning Board Aids Orderly Development

By RUSSELL VAN NEST BLACK
Planning Consultant

PIONEERING in new approaches and procedures for guiding the growth of their city and county, the officials of Winston-Salem and Forsyth County, N. C., have effective allies in their joint City and County Planning Board. Here is the story in brief.

Winston-Salem, seat of Forsyth County, had its beginnings nearly 200 years ago in the Moravian settlement of Old Salem. A century later it began its expansion around the tobacco industry, and its gradual evolution into a place of broadly diversified activities and interests. It is now a city with a population of about 87,000,* with many fine homes and much poor, Negro housing. The community is proud of the one and increasingly conscious of the other. Outstanding are its schools, churches, and other community facilities. Among major developments in process are a new school of medicine, a million-dollar coliseum and an $800,000 public library financed by private subscription, and a new Wake Forest College on a 200-acre campus.

Being progressive in other matters, the community came naturally to the thought of over-all planning and the corollary procedures for guiding both current improvements and future growth. There was a 30-year-old plan for the city which had been observed in some important respects, and a 20-year old zoning ordinance. But in a modern sense, organized planning for Winston-Salem had to start from scratch. North Carolina had only rudimentary enabling legislation for municipalities, none for counties, and its zoning legislation applied only to incorporated places. The first necessary step, therefore, was drafting a full range of new planning and zoning enabling legislation. In this legislation, applying only to Winston-Salem and Forsyth County, were introduced several new and pioneering features.

As common to most larger cities, Winston-Salem had grown to its limits, and new development had long since begun spilling over into the perimeter areas and, sporadically, far out into the county. Since North Carolina townships serve no function other than as voting districts, there was no organized government for the perimeter areas except that which was supplied by the county. General legislation gave the city somewhat nebulous regulatory jurisdiction over the territory within 1 mile outside the corporate limits. But this was not, and could not be, very effectively applied. The legislative problem, therefore, was to enable an effective approach to planning and zoning on a metropolitan and county-wide basis.

Exceptional Powers Granted

With this end in view, the new legislation as enacted was extended beyond the usual enabling powers to include: (1) provision for the creation of a joint City and County Planning Board with planning and land-subdivision control and zoning powers over the entire city and county with the exception of one small, isolated borough; (2) extension of the city's zoning jurisdiction to 3 miles beyond the corporate limits, and (3) a provision requiring review by the Planning Board of development projects undertaken by school boards, housing authorities, and other public agencies. A more usual provision gave both governing bodies representation on the joint planning board.

The over-all planning and zoning program was begun in mid-1946 by a temporary City-County Planning Commission, under contract with a planning consultant. Subsequently, the Commission was reconstituted as a City and County Planning Board in accord with the new legislation. The work was done in Winston-Salem by a consultant-supplied staff serving also as an interim staff to the Planning Board in matters coming currently before that Board. The contractual features of the program were completed in mid-1948. Included among other things were: a master plan for the city; general development plans for the metropolitan area and for the country; designation of substandard areas possibly subject to clearance and redevelopment; zoning ordinances for the city and its extended-control area, and land-platting regulations and procedures. Upon completion of this initial phase of its work, the Planning Board immediately organized its permanent staff, and this staff, adequately manned and financed, now carries on with the administration of the plans and their further development.

Among the more spectacular and immediate features of the plan are: (1) a throughway extending across the breadth of the city and narrowly bypassing its center, an incidental effect of which will be clearance of considerable slum property; (2) a great recreational center at the edge of the city to include among other facilities the projected coliseum, a new county fairgrounds, and the Wake Forest College stadium, and (3) a parkway skirting the northerly, sparsely developed section of the city, from which will stem the recreational center, the new college, and the medical school.

The plans cover also the physical-improvement and development needs of a community growing rapidly to an as yet unpredictable size, including such interrelated matters as housing, public finance, and industrial and economic factors. An expandable arterial-thoroughfare system has been framed in the concept of physically self-sufficient and protected residential neighborhoods.

In the proposed recreational system, primary emphasis has been placed upon neighborhood play areas to be developed in conjunction with existing and future school grounds. These plans have a two-fold object: to augment the schools' proper function of serving as the recreational and cultural, as well as the educational center of their neighborhoods; and (b) to assure adequate, convenient recreational facilities, for people of all ages, with maximum efficiency at minimum cost.

Unusual Zoning Provisions

Unusual features of the new city-zoning ordinance are, as mentioned above, the extension of coverage and jurisdiction to include the 3-mile perimeter, and a special device for the preservation and possible restoration of Old Salem and of Old Town, another early settlement just outside the city. This device included setting up a Board of Architectural Control to review and approve all new construction and major alterations in the two areas designated as of special historic interest and value.

The local newspapers gave excellent support to both the process and the plan throughout the initial work pro-

* About 120,000 in the metropolitan area as defined for purposes of planning study.

gram, and have continued to do so. Reporters and feature writers were specifically assigned to planning matters, and maintained an almost continuous flow of news items and special articles. At the conclusion of the initial program, the papers carried the entire covering report in serial form.

The plan is long-range, and as such can be fully materialized only over a long period of years, but progress during the three years since its inception has been most encouraging. Perhaps more important than actual planned accomplishments — which are considerable—is the fact that the plans are being seriously regarded in all matters upon which they have bearing. There have been some changes in plans, and there will be more, as is appropriate to any live plan for a growing and changing community. But the city and county are set up for that in an interested and informed planning board with a competent permanent staff, backed by an unusually well-informed public. This, we think, coupled with the pioneering approach to old troublesome problems — particularly that of integration of city and region — makes worth telling the story of planning in Winston-Salem and Forsyth County.

An important recent development in the City of Winston-Salem, reported by Henry C. Moore, Director of Planning of the City-County Planning Board, is the establishment of a Redevelopment Commission. The necessary enabling legislation has been enacted by the State Legislature, and application is being made for a capital-grant reservation. "We are now exploring the possibility," writes Mr. Moore, "of assigning all of the staff work of the Redevelopment Commission to the office of the Planning Board and the office of the Housing Authority."

EDITORIAL NOTE: See also "Winston-Salem Blueprints Become Footprints" on page 9 of this issue.

Winston-Salem and Forsyth County To Have Modern Library Facilities

By HARRY BLISS

IN 1905 the Carnegie Foundation made a grant of $15,000 to Winston-Salem, which was used to build the present library. The city furnished the site at a cost of $2,000 (now worth an estimated $75,000) and agreed to assume operation costs of $1,500 per year.

During the intervening years the Carnegie Library has remained unchanged, except to become increasingly congested as the number of volumes grew from 3,000 to 40,000. The only expansion has been the Horton Branch for Negroes, which has a capacity of 10,000 volumes.

Realizing that something had to be done to correct the inadequacy of the community's library facilities, Ralph P. Hanes, Chairman of the Winston-Salem Forsyth County Library Board, induced 25 firms and individuals to provide $800,000 for a new building and ite. This sum includes the cost of a new Horton Branch for Negroes.

The main building, to be located on Fifth Street, about four blocks from the business center of the city, will provide an assembly room for lectures, musicals, visual aid, and other like functions. There will be space for art, sculpture, photography, school, and other exhibits. Listening tables at which people of all ages can sit and hear good records, are another feature. The Fowler-Jones Co., of Winston-Salem, are the general contractors for the building.

In the development of the book stock list, particular attention is being given to business, technology, home economics, agriculture, animal husbandry, music and other arts, and world affairs. Books of interest to school children of all ages will have prime consideration.

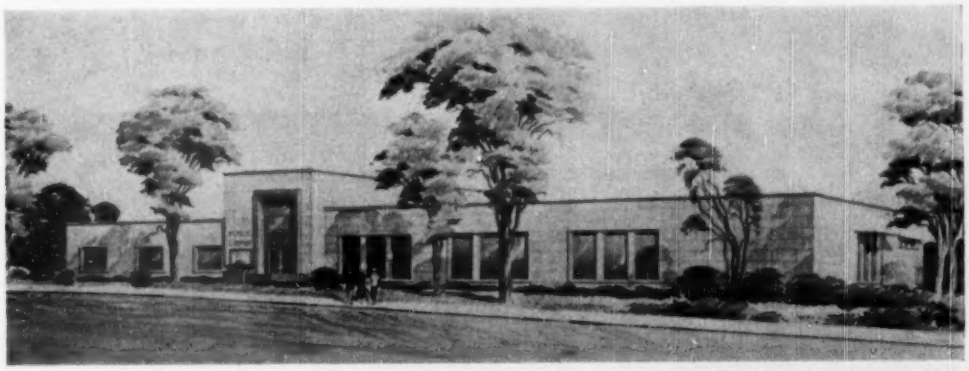
At a meeting of the sponsors, Mr. Hanes pointed out that the fundamental purpose of a public library is to promote enlightened citizenship and to enrich personal life.

Stated differently [said Mr. Hanes] a library's functions are characterized by five words: Education, Information, Research, Esthetic Appreciation, and Recreation. It furnishes information for the craftsman, fundamental journals for the technologist, scholar, and scientist, and as incentive to change and progress to the public generally.

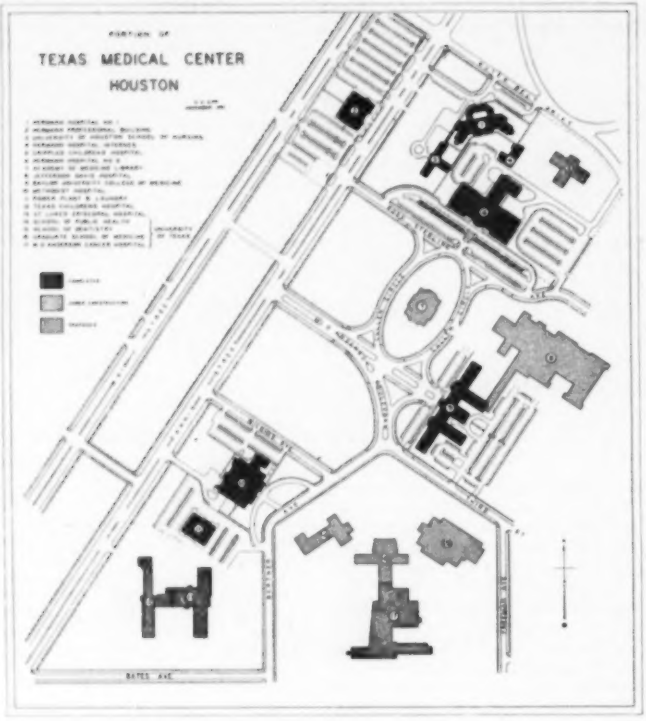
For too long has our local library, owing to lack of adequate resources, failed to perform these functions adequately. For too long have we spent millions on education, but a negligible amount to satisfy the thirst for knowledge thus created.

Now, and without further delay, let us build for our present citizens and for the generations to come, adequate library facilities capable of expansion as our population increases, and sufficiently stocked with books to meet the needs of this progressive community.

To help in meeting this challenge, Winston-Salem and Forsyth County will soon have one of the most adequate libraries in all of North Carolina. This project, intended to promote the cultural causes of the entire community, again marks Winston-Salem as one of the more progressive cities of the country.



A sketch for the Winston-Salem and Forsyth County Public Library. Northup & O'Brien are the resident architects, and Alfred Morton Githens is the consulting architect. Charles M. Mohrhardt is library consultant.



Huge

Texas Medical Center

Makes Progress in Houston

ONE HUNDRED SIXTY-THREE acres of beautiful, wooded parkland in Houston, Texas, are being rapidly transformed into the Texas Medical Center, which will someday rank with the great medical centers of the nation.

Although only in its sixth year, capital investments in the Texas Medical Center today add up to more than $53,000,000. This does not include the $12,000,000 Veterans Administration Hospital that is located just outside the tract, but is an integral part of the medical program of the Center.

Completed buildings and land improvements account for more than $26,500,000. Hospitals now under construction are costing more than $14,250,000. Buildings to be under construction before the end of 1952 account for another $13,750,000.

An Integrated Plan

This immense building program is the result of an integrated plan designed to create in the Southwest a medical center that will meet the health needs of the people, the educational requirements of the medical and dental professions, and the research facilities essential to advanced scientific investigation.

The Texas Medical Center had its beginnings in the minds of the trustees of the M. D. Anderson Foundation following the death of Monroe D. Anderson, who had left his fortune of more than $20,000,000 in a trust fund to be used for the benefit of his fellow men. Mr. Anderson, one of the partners in the cotton firm of Anderson, Clayton & Company, named as the trustees of the Foundation John H. Freeman and William B. Bates, lawyers, and Horace M. Wilkins, banker.

These three Houstonians initiated the Medical Center movement by sponsoring the establishment of the M.D. Anderson Hospital for Cancer Research as a unit of the University of Texas, and contributed more than $2,000,000 and a temporary home for the hospital. The Anderson Foundation purchased 143 acres of land from the

Baylor University College of Medicine, in the Texas Medical Center.

City of Houston at a cost of $450,000, and Hermann Hospital joined its 20-acre development to the project.

Since that beginning, the Medical Center project has been the recipient of many millions of dollars in gifts from the Anderson Foundation and the Cullen Foundation; drives among citizens of Texas have produced large sums; the State Legislature has appropriated building funds, and the City of Houston and County of Harris have included bond funds for hospital buildings.

Streets and Utilities

The year 1946 was marked by the dedication of the giant project at which time the long-range plan was laid before the public: the start of construction on Baylor University College of Medicine, and the beginning of site development of the beautiful tract.

Since that time boulevards, streets, parkways, and esplanades have been completed, utility lines laid, and street lights and lawn-sprinkler systems installed at a total cost of more than $500,000.

Hermann Hospital has added a $5,250,000 building to its hospital group and a 14-story office building for doctors and dentists. Methodist Hospital has completed a beautiful new 315-bed hospital. The University of Houston has established its Central College of Nursing in the Center.

The $1,000,000 building of Arabia Temple Crippled Children's Clinic is scheduled for completion and opening in the Center early in 1952. The Texas Children's Hospital is under construction and when completed this $2,000,000 hospital will be one of the most modern and complete special hospitals of its kind in the nation. Construction also is going forward on St. Luke's Episcopal Hospital, and these two are scheduled for completion by early 1953.

The new M.D. Anderson Hospital for Cancer Research, costing approximately $8,000,000, is under construction and scheduled for completion in 1953.

The University of Texas Dental Branch, a $4,300,000 project, is due to go into construction sometime early in the new year. The year 1952 also will bring a start of construction on the new $7,500,000 city-county charity hospital and the $1,000,000 Medical Library of the Houston Academy of Medicine.

Site Improvements and Building Plans

Tracts of land, ranging in size from 21 acres to 3.4 acres, have been given to the various institutions by the Texas Medical Center, Inc., which also paid all costs of site improvements. Each institution has been provided with sufficient land for trees, grassy areas and off-street parking.

Three of the five buildings in the Hermann Hospital group. In the foreground is the 390-bed Hermann Hospital; Hermann Professional Building is in the background. Between the two is the University of Houston College of Nursing.

All building plans, plot plans, specifications, and additions to existing buildings in the Center must be approved by the Architectural Committee of the Texas Medical Center. This committee is headed by James Chillman, Jr., director of the Houston Museum of Fine Arts and Professor of Architecture at Rice Institute. The other members are Ralph S. Ellifrit, Director of City Planning for the City of Houston, and Mrs. Sue Barnett, assistant to the president, Texas Medical Center, ex officio.

Buildings in the Center are not required to be uniform, but are of the same general character, following the modern trend in a welcoming rather than an austere manner. Stone, marble, and brick in soft, light colors are being used for all exteriors.

Four universities and eight hospitals already are members of the Texas Medical Center organization, some of them located outside of the Medical Center tract but participating in the teaching and research work. In addition, other sections of the state are being linked with the project through the University of Texas Postgraduate School of Medicine, which is located in the Center. This institution has established divisions of the Postgraduate School in San Antonio, San Angelo, and Temple, and also has conducted refresher courses and special classes for practicing physicians in other towns of the state.

The Texas Medical Center was established for a three-fold purpose: the training of physicians, dentists, nurses, public-health workers, technicians, and others in the arts and sciences devoted to health; the encouragement and conduct of research and medical investigation, and the care of the sick and aid in the development of higher standards of hospital and medical service. It has made good progress in its first five years and anticipates equally successful development of its program during the next five years.

An Ideal Leadership Group for a City

SUMMING UP the chapter on Community Leadership, in his recent monograph on *The Moral Integration of American Cities*,* Robert Cooley Angell, Chairman, Department of Sociology, University of Michigan, lists the characteristics of an ideal leadership group for a city, as follows:

1. Composed of well-educated persons.
2. Composed of those whose original involvement in community affairs sprang from their own interest, the involvement of their friends, or the nature of their profession.
3. Widely representative of the socio-economic groups within the city.
4. Made up in somewhat equal proportions of those who were born in the city, those who were born elsewhere but have lived in the community a long time, and those who have lived in the community a decade or so
5. Composed of those who have had enough contacts with other segments of the population to enable them to understand their points of view (social realism)
6. Marked by congeniality but not "cliquishness"
7. Composed of those who realize the importance of effort and informal organization in overcoming public apathy toward community problems.

*Published as Part 2 of the July 1951 issue of the *American Journal of Sociology*, The University of Chicago Press, Chicago 37, Ill.

Spring inspection of St. Louis' grounds personnel and mowing equipment at Forest Park.

Tough Times Taught St. Louis

—*How to Mow 73 Parks*

FAIRGROUNDS PARK totals 131 acres, is fairly level, has one lake, some baseball diamonds, tennis courts, etc., and does not have too many trees or shrubs. The grass-cutting equipment used in 1950 consited of two tractors, each with a three-gang mower outfit pulled behind, two small rotary mowers, and three hand mowers. Seven men using this equipment were unable to keep the grass cropped and so could not maintain the park properly. This summer the park used one tractor, with a five-gang mower trailing, and a Toro 76-inch Professional. The one man riding on the Professional replaced the five men with the hand mowers.

Long-Range Plan

That instance of streamlining park mowing is not isolated or accidental, but part of the policy of the Park Department of the City of St. Louis, Mo., that has been developing for 20 years. Wars and material shortages slowed the acquisition of enough new equipment and experience with it to achieve much earlier the results hoped for. Recent and looming manpower shortages, however, intensified the need to work out our streamlining plan as soon as possible.

It all began in 1941 when, just before the war, the St. Louis Park Department purchased six 76-inch Professional mowers. At that time the Park Department was responsible for the maintenance of 73 parks and playgrounds, comprising a total area of approximately 2,700 acres, but with each unit varying in size from 13 acres to Forest Park's 1,380 acres and widely scattered over 100 square miles and as far apart as 15 miles. This created a very difficult problem in getting the job done efficiently and at the lowest possible cost to the taxpayer. Not only were the new mowers much more effective than was our older equipment, but they

By JOHN J. O'TOOLE
Public Welfare Director
St. Louis, Mo.

A service session with the St. Louis Park Department operators; they are going over a Toro Professional, which replaces five hand-operated machines.

were found to be much easier for older men to use because of the comfortable riding sulky and the fact that the reverse gear eliminated the need for pulling a heavy power mower out of corners.

Because we were unable to replace any of the existing equipment from 1941 to 1946, the 1940 mowers became the basic cutting unit. From 1946 to 1949 20 more of the same model were purchased. These machines were placed in various parks throughout the city. In some parks tractors with gang mowers were used to cut the open areas. Trimming was performed by the new mowers. In other smaller parks only the new type was used, because there were too many trees and shrubs for tractor operations. A considerable number of small rotary mowers and hand mowers were used to trim around shrubs and trees, and along fences and curbs.

Streamlined Maintenance

In 1950, in view of the national emergency, a survey was made of the entire park system with the idea of streamlining the maintenance procedure of the department should the emergency cause a reduction in personnel. The city was laid out into 10 geographical zones with a certain group of parks and playgrounds in each section. As a result of this survey, the following steps were taken with regard to grass cutting:

1. A foreman was put in charge of each zone, and three were coordinators made responsible for the north, south, and central areas of the city. Their job is to see that the operators are keeping up with the grass cutting, and to shift equipment from one section to another if necessary to keep up with the work. Each park has a keeper who is responsible for the grass cutting in his park.
2. The grass-cutting equipment was allocated to the various parks, on the basis of acreage, terrain, trees, shrubs, and buildings.
3. Smaller parks of 15 acres and under are cut by a Professional mower from the headquarters in that particular zone.
4. Two Toro Park Patrols were purchased. One was placed in the north end of the city to cut in sections 7, 8, and 9; the other in the south section of the city to cut in sections 1, 2, 3, 4, and 5. These units have three-gang mowers on the back, which are raised and lowered hydraulically, and a 5-foot sickle mower also controlled hydraulically. These units can travel on the streets from one park to another, and are especially useful for boulevard park strips and extra cutting at large athletic fields.
5. Ten more Toro 76-inch Professionals were purchased, giving a total of thirty 76-inch Professionals, 2 Park Patrols with sickle mowers, 13 tractors with and without sickle mowers, 65 gang mowers to pull behind these tractors, 20 small rotary mowers, 7 small gasoline-powered walking-type sickle mowers, several other miscellaneous power mowers, and a quantity of hand mowers.
6. A mechanic was hired to act as a roving, portable service-shop. He goes from park to park, checks the machines, and makes the minor repairs. He will have a spare mower with him to leave when he finds a machine that has to be taken into the shop. His tools include a power greasing outfit.
7. A school was set up on March 26, 1951, for the old and new operators of all tractors and mowing equipment. The operators were given complete schooling on the operation and maintenance of the machines and the park keepers were called in for lectures on maintenance.

Repairs on mowers during the war years when it was essential that the equipment we had be kept in service at all costs, emphasized unforgettably the importance of proper operation and informed maintenance. In the first place, there is the advantage of standardization. In the matter of upkeep, it is said that 42% of service troubles is owing to lack of ordinary care of equipment, and 54% is because operators do not follow operating instructions. Here is a chance to eliminate almost 96% of the breakdowns. The school program has been effective and will become an annual feature of our training program.

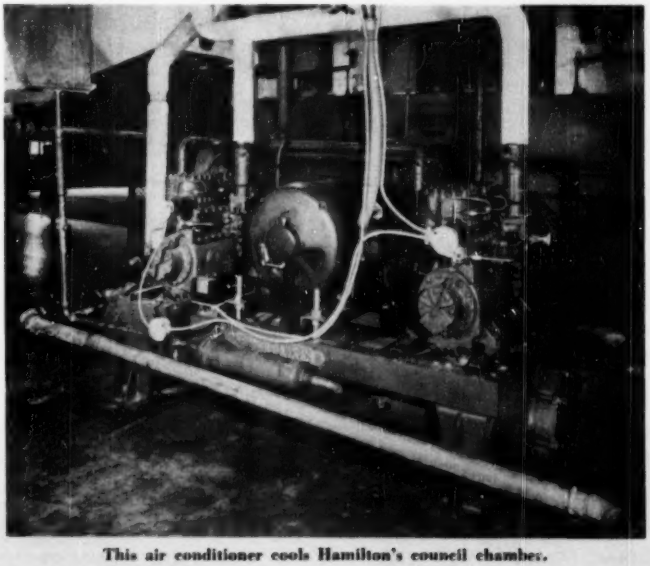
Central Air Conditioners Serve Municipal Building

THE municipal building of Hamilton, Ohio (population 60,000), is equipped with two central-system air conditioners, one of 20-ton capacity and the other 15 tons; two ½-hp window-room air conditioners, and a large central water refrigeration system providing water for three remote drinking fountains. All equipment was installed by the Allied Refrigeration Company, local Frigidaire dealers.

The 20-ton system cools the utility offices, council chamber, and city manager's offices. The 15-ton unit, installed 12 years ago, supplies conditioned air to the police department and municipal court chambers.

The Hamilton municipal building, of white stone, overlooks a city memorial park and the historic Miami River. One of the most attractive rooms in the building is the council chamber where a huge mural, depicting the founding of Fort Hamilton in 1791, adorns the front wall.

W. F. SWITZER
Commercial Sales Manager
Frigidaire Division
General Motors Corporation
Dayton, Ohio



This air conditioner cools Hamilton's council chamber.

Santa Rosa Segregates Water and Sewage Charges In Simplified Machine Billing

By SAM HOOD
City Manager
Santa Rosa, Calif.

OUR AIM in setting up the City of Santa Rosa's billing procedure for water and sewer charges was to economize, make the procedure as simple as possible, and still have the necessary information for record and auditing purposes.

To start, we increased the number of our meter books, reduced their individual size, and changed our meter reading and billing to a continuous operation geared to a rate at which each meter is read once every two months, with one meter book read and billed each day. At present, approximately 200 meters are read and a like number of bills prepared per day. We have approximately 9,000 service connections at the present time.

Meter Books

For identification purposes, our meter-book pages are colored either white or yellow. The yellow pages are for connections outside the city limits and the white for those inside. These pages are considered a permanent record and include the applicable sewer- and/or water-service charge (for connections outside city limits), water-consumption charge, partial-bill charges, and guaranteed-deposit record in addition to such customary entries as account number, type, serial number, location of meter, meter-change record, past and previous readings, and water consumption.

With one exception, the billing-machine operator obtains from the meter pages all the information necessary to prepare the bills. The arrears entry is obtained from the office copy of the bills still remaining in the file under the particular book number at the time the bills are again prepared for that book.

The bill form is divided into three sections, perforated for ease of separation, and consists of the customer's itemized bill and stub (the combined size of which is that of a post card), and the itemized office copy of the bill.

The entries as shown on the accompanying sample bills are made by the billing machine with the exception of the dates of the meter-reading period, customer's name and address, and account number, which are entered by an addressing machine.

Because we have both gallon and cubic-foot registering meters in service, we show consumption either in gallons or cubic feet; in addition, since most of the bills are for connections inside city limits without arrears and do not have the water- or sewer-service charge, the single-line bill is predominant.

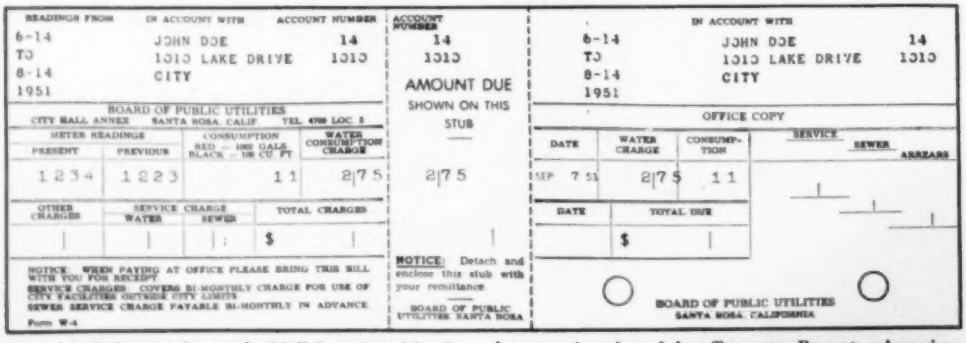
The customer's portion of the bill is mailed to him and the office copy is filed by meter-book number (the first part of the account number corresponds to the meter-book number).

When paying by mail, the stub is returned with the remittance, stamped with a dated "paid" stamp, attached to the office copy of the bill, which is removed from the current-bill file, and filed according to the date paid for future reference. When payments are made at the office, the customer's detailed section of the bill is stamped "paid," and returned to them as their receipt. The rest of the procedure is the same as that for mailed payments.

Two control-account books are kept. One contains a page for each meter book on which is shown in columnar form and by date the amounts billed, adjustments made by account number, revenue received for water consumption, sewer- and water-service-charge revenue, and balance due. The other book is a master control, in which the same information as shown by individual meter books in the first control is consolidated for all meter books by day for the month.

Why the Charges Are Separate

A cash-receipt ledger is also kept showing the revenue collected by month and by breakdown into water-consumption revenue, water-service-charge revenue, and sewer-service-charge revenue. The reason for keeping an individual accounting of billings and charges is that since the City Water Department is self-sustaining, the revenue for water consumption and water-service charge has to be kept entirely separate from the sewer-service charge which is a general fund item. The further breakdown between the water-consumption revenue and water-service charge is necessary because the service charge was put into effect mainly for improvements to the system necessitated by the growth outside the city limits. The individual breakdowns make a sound basis for determination and study of the adequacy of the water rates and the capital available for major improvements and ad-


READINGS FROM 6-14 TO 8-14 1951 — IN ACCOUNT WITH JOHN DOE 1010 LAKE DRIVE CITY — ACCOUNT NUMBER 14 1010

BOARD OF PUBLIC UTILITIES
CITY HALL ANNEX SANTA ROSA, CALIF. TEL. 4700 LOC. 3

METER READINGS PRESENT	METER READINGS PREVIOUS	CONSUMPTION RED — 1000 GALS BLACK — 100 CU FT	WATER CONSUMPTION CHARGE
1234	1223	11	2|75

OTHER CHARGES	SERVICE CHARGE WATER	SERVICE CHARGE SEWER	TOTAL CHARGES
			$

NOTICE—WHEN PAYING AT OFFICE PLEASE BRING THIS BILL WITH YOU FOR RECEIPT
SERVICE CHARGE—COVERS BI-MONTHLY CHARGE FOR USE OF CITY FACILITIES OUTSIDE CITY LIMITS
SEWER SERVICE CHARGE PAYABLE BI-MONTHLY IN ADVANCE
Form W-4

ACCOUNT NUMBER 14 1010
AMOUNT DUE SHOWN ON THIS STUB
2|75
NOTICE: Detach and enclose this stub with your remittance.
BOARD OF PUBLIC UTILITIES SANTA ROSA

6-14 TO 8-14 1951 — IN ACCOUNT WITH JOHN DOE 1010 LAKE DRIVE CITY — 14 1010

OFFICE COPY

DATE	WATER CHARGE	CONSUMPTION	SERVICE	SEWER	ARREARS
SEP 7 51	2|75	11			

DATE	TOTAL DUE
	$

BOARD OF PUBLIC UTILITIES
SANTA ROSA, CALIFORNIA

Reproduced above is the standard bill form issued by the Board of Public Utilities of Santa Rosa, Calif. It is made up of three sections—the customer's itemized bill, the customer's stub, and the office copy. Present and previous meter readings, water consumption in gallons, and water-consumption charges are recorded.

ditions to the distribution system outside the city limits.

In order to get the information which was required on the bills and for our records, our billing machine has to be able to accumulate individually the billed consumption of water either in gallons or cubic feet, the water-consumption charges, the water-service charges, and sewer-service charges.

In choosing our machine we wanted one that was proved accurate, was able to imprint the necessary information on the customer's itemized bill, stub, and office copy so as to be neat, easily read, adequately spaced, and still fit on post-card-size forms. We also wanted it to be fairly rapid, easily operated, and requiring the minimum amount of manual manipulation. The price of the machine and its delivery date were also taken into consideration.

The machine that satisfied all our requirements and the one which we purchased, and is at present giving us excellent service, is the Underwood Sundstrand Accounting Machine fitted with a special front plate.

Results Satisfactory

On a bill that includes all the items, the operator has six entries to make, one each for present and previous readings, water-consumption charge, other charges, water- and sewer-service charge. Other entries are automatic.

We have been very pleased with the results obtained by our billing procedure. No actual study has been made to determine the saving in time and money; however, the benefits are very noticeable.

Our continuous meter reading and billing at a bi-monthly rate has enabled us to use only one instead of two meter readers, and has correspondingly reduced both monetary and clerical requirements for our billing postage, preparation of bill forms and bills, the keeping of records, receiving payment of bills, etc. The new billing machine has also added to the efficiency by reducing the time required to prepare the bills by a miminum of approximately 30%, thus enabling the operator to use the additional time for other clerical work. Our auditors also have been pleased with the system, since they have had no trouble in checking our records and accounts.

Toledo Fogs at Night to Kill Adult Mosquitoes

By DR. HERBERT A. CRANDELL, *Superintendent*
Toledo Area Sanitary District
Toledo, Ohio

IF YOU want to make a clean sweep of the adult mosquitoes in your community, plan to make your attack after dark. There are two reasons and neither of them is that the mosquitoes don't see so well after dark. Normally most of us have found that mosquitoes seem to fly faster, bite harder, and sing louder when the sun goes down.

We've found that first of all, the night atmosphere works for you. During the day the sun heats the air, lifting it into the sky, carrying with it much of your insecticide. But in the evening, the atmosphere cools and blankets down on the surface of the ground, holding the insecticide close to the earth, causing Mr. Mosquito all sorts of trouble and inconvenience.

The second reason is that the work itself is a little easier. During the day you have all sorts of "small fry" help. The children, naturally curious, climb on the trucks, annoy the operators, ride their bicycles through the fog from the machines and bump into each other. We do our work chiefly between the hours of 9:30 p.m. and 5:00 a.m. Most children should be in bed at that hour.

For tackling the adult mosquito, the Toledo Sanitary District customarily uses a TIFA (Todd Insecticide Fog Applicator) mounted on a Jeep truck. The tank of the machine holds 110 gallons, an amount that will carry us through one night's fogging comfortably. The truck also carries a flashing red warning light.

For the past three years we have used 5% DDT plus 5% Lethane with No. 2 fuel oil, and have found that it not only kills the moquitoes in short order, but is also very effective in killing flies. We customarily drive the truck at 5 miles per hour and apply a "dry" fog—one that will not show an oily film on the hand when it is held three feet from the atomizing nozzle.

But the adult mosquitoes aren't the only ones we go after. For larvae or wrigglers, we use five Jeep one-ton trucks mounting 50-gallon power sprayers for general larviciding and four Jeeps mounting 60-gallon high-pressure tanks for spraying catch-basins. The larvicide for general spraying is a 20% oil-in-water emulsion containing 0.25% DDT; for catch-basin spraying, 1% DDT in No. 2 fuel oil. These are used during the active breeding season.

For the control of woodland and flood-water breeding, the district uses power-dusting equipment for the pre-hatch application of larvicides or DDT dust. This is applied during the late winter before breeding starts. For this we use three Root power dusters mounted on Jeeps, and a Bean Mist-Duster.

Pre-hatch larviciding with power-dusting equipment under way for the control of woodland and flood-water breeding.

Standard equipment for Toledo's mosquito war is this Jeep truck, on which is mounted a TIFA fogger and a tank.

Water-Works Practice in Scandinavia

Smaller meters, requiring more frequent checking, are used extensively in these countries

By JENS DUUS
Factory Manager
Buffalo Meter Company
Buffalo, N. Y.

LAST summer, during a lengthy trip to Scandinavia, I had an opportunity to observe many details of water-works practice in these countries. Having been engaged for 25 years in the manufacture of water-works equipment, I was interested to see both the differences as well as the similarities of practice there compared with the usual procedure in the United States. In Norway, Denmark, and Sweden I was most pleasantly received by water-works men and was given every opportunity to observe how they met their problems.

Norway has no problem of water supply. There are numerous lakes, fed by melting snow, so water conservation is not a serious problem there. The largest water system is that of Oslo, managed by Mr. Sigbjorn Beckholm, Chief Engineer, and Mr. Hans Grim, Assistant. The main reservoir for the City of Oslo is a natural lake, Maridalsvatnet.

This reservoir is fed by a system of linking lakes, controlled by locks which are used to store and regulate the water, especially in dry seasons. The main reservoir has a capacity of about 70,000,000 cubic meters* and supplementary lakes feeding into it have a total capacity of about 180,000,000 cubic meters compared with the city's total usage of about 50,000,000 cubic meters per year. The entire system is gravity-fed and in some cases pressure-reducing valves are necessary to avoid excess pressure.

Sportsmen Aid in Policing

Fishing is prohibited in the main reservoir and in the feed lakes immediately ahead of it, but is permitted in some of the upper reservoir lakes. A special fishing club has been organized, the members pledged to act as police in enforcing sanitary regulations. Trout fishing in these lakes is exceptionally good and the unwanted, inedible fish are removed by netting. Bathing and camping are not tolerated near the feed lakes or main reservoir.

The authorities do, however, have one important seasonal problem. In winter, Oslo is the greatest city in the world for skiing. During the Easter holidays 150,000 to 200,000 people go skiing on the hills outside the city, including the water reservoir area. At this time, with the lakes frozen over, the bacillus coli content of the water is practically nil. A little later, when the snow melts, the bacillus coli count increases greatly, and extreme care is needed to keep this under control in the early summer. The water is chlorinated and sometimes treated with other chemicals as needed.

Meters

The main supply lines to the city are metered with venturi meters, but because of the abundance of water, there are only about 5,000 service meters installed in Oslo. About 1,000 are ½-inch size, 2,500 are 1-inch size, and the remainder are larger sizes. The natural habits of the people do not involve the use of a great quantity of water, so the small-size spiral-propeller type meters are largely used. Most of the meters have come from Germany, but some come from France and Switzerland.

Standard European ½-inch meters are much smaller than the American standard ⅝-inch domestic meters, weighing only about 5 pounds compared with an average weight of 10 pounds for the American type. The measuring element, or rotor, is made of vulcanized rubber, which is called Ebonite in Europe. The same material is sometimes used for the housing around the gear train when this is of the oil-enclosed type. Measuring chambers are frequently made from vulcanized rubber; one manufacturer uses an impregnated graphite rubber for this part, the theory being to lubricate the measuring element by the graphite. Hard rubber and plastics are used in European meters to a much greater extent than in the United States, although the over-all length of life of the meters is much less. Oslo must remove domestic meters for checking every three years, and larger sizes, particularly the compound meters used for the larger services, more frequently. The city owns the meters and maintains them.

In Oslo and other Norwegian cities a method of computing the flat-rate charges for unmetered water is used which would be regarded with amazement here. The flat-rate water charges are calculated according to the tax assessment of the property with no reference to the number of outlets, number of occupants, amount of lawn, or other bases sometimes used in the United States. The water department would like to use meters much more extensively.

Denmark Metering Practice

In Denmark, I visited the Town of Gentofte, which has the most fully metered of any water works in that country, having 15,000 meters for a population of 90,000 people. Meters there are rented to the consumers at an annual charge of approximately 10% of the value of a new meter. This includes the service charge for keeping the meter in repair. Any unmetered services in Denmark are in general charged on a flat-rate basis calculated by number of outlets, but in a few towns the dwelling-valuation basis is used as in Norway.

The terrain of Denmark is very flat, with few lakes, and water is less plentiful in Denmark than in any of the Scandinavian countries. The water supply all comes from wells. As a quarter of Denmark's 4,000,000 inhabitants lives in Copenhagen, the city now finds it necessary to dig wells as much as 50 miles away to get a sufficient supply.

Denmark is largely made up of sedimentary deposits left from the Ice Age. Down to a depth of 300 feet the land is generally top soil, then sand, then lime. Water is pumped from the lime strata. Wells are drilled 100 to 250 feet down, then pipes extend to the lime deposit, another 30 to 50 feet down. As the water seeps downward through sand before reaching the lime strata, the water is naturally filtered. A second filtration is given by the water department and the water is aerated. No chlorine or other chemicals are necessary.

In Sweden, the water-supply situation is comparable to Norway, but almost all services are metered. Water quality is excellent, although a little hard in some towns. It is generally filtered and chemically treated, and I found water-works practice generally very advanced.

Stockholm uses a natural lake, Malaren, as a reservoir, which is fed by the combined overflow of other connecting lakes. Swedish cities have the same

* 264.2 gallons per cubic meter.

problem of bacillus coli in the spring as do Norwegian cities, where the hills of the watershed are used in winter for skiing slopes.

Gothenburg takes its water from the near-by Gota Alv River, the water being prefiltered. Natural banks of sand left from the Ice Age are used now to filter the river water before it is taken into the water-works intake. Similar banks of sand exist throughout the lowlands of Sweden and can be observed inside the City of Stockholm today.

There is a total of 300,000 to 400,000 water meters in Sweden. They are mostly of German manufacture, but now about half are made locally. All domestic meters are of the small European ½-inch size, which would be quite inadequate for American water works, as they do not have sufficient capacity nor length of life. However, when new they are accurate at slow flows and are carefully rechecked every three years.

Central Dumping Saves at Concordia, Kans.

By E. ALAN WEBSTER
City Manager
Concordia, Kans.

OUR NEW street sweeper enables us to accomplish that municipal maneuver that is dearest to every city manager: with it, we can increase the street-cleaning service and reduce our operating costs.

We are using a Wayne sweeper, distinctive because of its large, 3-cubic-yard-plus hopper and its rapid traveling speed when not sweeping. It requires only one employee. He can pick up the sweepings, haul them to one of our designated disposal sites—we have three throughout the city—and dump the sweepings. For this same job, using our former sweeper, we needed seven men if we swept a continuous 8-hour shift. One man operated the sweeper and dumped the sweepings in piles at frequent intervals along the street. The other six men in two trucks followed and loaded the sweepings on their trucks. Then they hauled the sweepings to a disposal site and dumped them. We feel that the new sweeper will enable us to do a better sweeping job and allow us to utilize our manpower much more efficiently. In the event of a future labor shortage, we will be in a much better position by having made our street-sweeping operation a one-man job from start to finish.

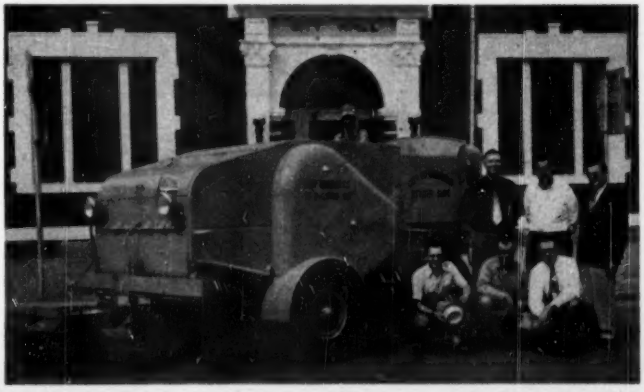
We are also getting nearly three times as much mileage per pick-up broom with our large new machine as we were getting with the older. We estimate that this alone will save us several thousand dollars during the 10 or 12 years of life that we can expect from the sweeper.

Our dumping areas are located so that at no time does this sweeper have to travel over two miles to reach them. The sweeper can travel at a speed better than 10 miles per hour.

Dumping Area

One of these dumps is on private property which the owner desired to be filled. He was willing to accept street sweepings along with other dirt which he bought and dumped on the lot. The second dump, located about a mile from the first, consists of two lots in the residential area owned by the city. These two lots were very low, but were available for sewer facilities, water, gas, and electricity. An excellent street goes past them. Over a year ago, even when we still owned our old sweeper, we began filling these lots in order to make them salable. They are now almost filled and several persons have inquired about buying them. Our third dumping area is located in back of our water plant on city-owned property. This area was an old river bed and hence is low. As we dump our sweepings there, we are gradually gaining more land for outdoor storage of water pipe and other city material.

The large hopper capacity and high traveling speed of this sweeper allows it to discharge loads at a central disposal site, thus reducing operating costs.



A major reason why Concordia's streets look and are cleaner is this Wayne street sweeper. Pleased with the efficient performance of this latest addition to the Street Department's equipment are, standing, left to right, Commissioners Henry Freeman, Raymond Johnston, and Mel C. Cool. In the front row, left to right, are City Manager E. Alan Webster, Street Superintendent Jack Burns, and City Attorney Clarence Paulsen. Seen at sweeper controls is Lloyd Lawrence.

Distribution of Population in Urbanized Areas: 1950

Urbanized area	Population	
	Number	Percent distribution
Total, 157 areas	69,249,148	100.0
In central cities	48,377,240	69.9
Outside central cities	20,871,908	30.1
Akron, Ohio	366,765	100.0
In Akron	274,605	74.9
Outside central city	92,160	25.1
Albany-Troy, N. Y.	291,897	100.0
In central cities	207,306	71.0
Albany	134,995	46.2
Troy	72,311	24.8
Outside central cities	84,591	29.0
Allentown-Bethlehem, Pa.	225,962	100.0
In central cities	173,096	76.6
Allentown	106,756	47.2
Bethlehem	66,340	29.4
Outside central cities	52,866	23.4
Altoona, Pa.	86,614	100.0
In Altoona	77,177	89.1
Outside central city	9,437	10.9
Amarillo, Tex.	74,443	100.0
In Amarillo	74,246	99.7
Outside central city	197	0.3
Asheville, N.C.	58,437	100.0
In Asheville	53,000	90.7
Outside central city	5,437	9.3
Atlanta, Ga.	507,887	100.0
In Atlanta	331,314	65.2
Outside central city	176,573	34.8
Atlantic City, N.J.	105,083	100.0
In Atlantic City	61,657	58.7
Outside central city	43,426	41.3
Augusta, Ga.	87,733	100.0
In Augusta	71,508	81.5
Outside central city	16,225	18.5
Austin, Tex.	135,971	100.0
In Austin	132,459	97.4
Outside central city	3,512	2.6
Baltimore, Md.	1,161,852	100.0
In Baltimore	949,708	81.7
Outside central city	212,144	18.3
Baton Rouge, La.	138,864	100.0
In Baton Rouge	125,629	90.5
Outside central city	13,235	9.5
Beaumont, Tex.	94,169	100.0
In Beaumont	94,014	99.8
Outside central city	155	0.2
Binghamton, N. Y.	144,011	100.0
In Binghamton	80,674	56.0
Outside central city	63,337	44.0
Birmingham, Ala.	445,314	100.0
In Birmingham	326,037	73.2
Outside central city	119,277	26.8
Boston, Mass.	1,233,448	100.0
In Boston	801,444	35.9
Outside central city	1,432,004	64.1
Bridgeport, Conn.	237,435	100.0
In Bridgeport	158,709	66.8
Outside central city	78,726	33.2
Brockton, Mass.	92,116	100.0
In Brockton	62,860	68.2
Outside central city	29,256	31.8
Buffalo, N. Y.	798,043	100.0
In Buffalo	580,132	72.7
Outside central city	217,911	27.3
Canton, Ohio	173,917	100.0
In Canton	116,912	67.2
Outside central city	57,005	32.8
Cedar Rapids, Iowa	78,212	100.0
In Cedar Rapids	72,296	92.4
Outside central city	5,916	7.6
Charleston, S.C.	120,289	100.0
In Charleston	70,174	58.3
Outside central city	50,115	41.7
Charleston, W. Va.	130,914	100.0
In Charleston	73,501	56.1
Outside central city	57,413	43.9
Charlotte, N. C.	140,930	100.0
In Charlotte	134,042	95.1
Outside central city	6,888	4.9
Chattanooga, Tenn.	167,764	100.0
In Chattanooga	131,041	78.1
Outside central city	36,723	21.9
Chicago, Ill.	4,920,816	100.0
In Chicago	3,620,962	73.6
Outside central city	1,299,854	26.4
Cincinnati, Ohio	813,292	100.0
In Cincinnati	503,998	62.0
Outside central city	309,294	38.0
Cleveland, Ohio	1,383,599	100.0
In Cleveland	914,808	66.1
Outside central city	468,791	33.9
Columbia, S. C.	120,808	100.0
In Columbia	86,914	71.9
Outside central city	33,894	28.1
Columbus, Ga.	118,485	100.0
In Columbus	79,611	67.2
Outside central city	38,874	32.8
Columbus, Ohio	437,707	100.0
In Columbus	375,901	85.9
Outside central city	61,806	14.1
Corpus Christi, Tex.	122,956	100.0
In Corpus Christi	108,287	88.1
Outside central city	14,669	11.9
Dallas, Tex.	538,924	100.0
In Dallas	434,462	80.6
Outside central city	104,462	19.4
Davenport, Iowa-Rock Island-Moline, Ill.	194,925	100.0
In central cities	160,656	82.4
Davenport	74,549	38.2
Rock Island	48,710	25.0
Moline	37,397	19.2
Outside central cities	34,269	17.6
Dayton, Ohio	366,864	100.0
In Dayton	243,872	70.3
Outside central city		
Decatur, Ill.	73,713	100.0
In Decatur	66,269	89.9
Outside central city	7,444	10.1
Denver, Colo.	498,743	100.0
In Denver	415,786	83.4
Outside central city	82,957	16.6
Des Moines, Iowa	199,934	100.0
In Des Moines	177,965	89.0
Outside central city	21,969	11.0
Detroit, Mich.	2,659,398	100.0
In Detroit	1,849,568	69.5
Outside central city	809,830	30.5
Duluth, Minn.-Superior, Wis.	143,028	100.0
In central cities	139,836	97.8
Duluth	104,511	73.1
Superior	35,325	24.7
Outside central cities	3,192	2.2
Durham, N. C.	73,368	100.0
In Durham	71,311	97.2
Outside central city	2,057	2.8
El Paso, Tex.	136,918	100.0
In El Paso	130,485	95.3
Outside central city	6,433	4.7
Erie, Pa.	151,710	100.0
In Erie	130,803	86.2
Outside central city	20,907	13.8
Evansville, Ind.	137,573	100.0
In Evansville	128,636	93.5
Outside central city	8,937	6.5
Fall River, Mass.	118,120	100.0
In Fall River	111,963	94.8
Outside central city	6,157	52
Flint, Mich.	197,631	100.0
In Flint	163,143	82.5
Outside central city	34,488	17.5
Fort Smith, Ark.	56,066	100.0
In Fort Smith	47,962	85.5
Outside central city	8,104	14.5
Fort Wayne, Ind.	140,314	100.0
In Fort Wayne	133,607	95.2
Outside central city	6,707	4.8
Fort Worth, Tex.	315,578	100.0
In Fort Worth	278,778	88.3
Outside central city	36,800	11.7
Fresno, Calif.	130,592	100.0
In Fresno	91,669	70.2
Outside central city	38,923	29.8
Galveston, Tex.	71,527	100.0
In Galveston	66,568	93.1
Outside central city	4,959	6.9
Grand Rapids, Mich.	226,817	100.0
In Grand Rapids	176,515	77.8
Outside central city	50,302	22.2
Greensboro, N. C.	83,412	100.0
In Greensboro	74,389	89.2
Outside central city	9,023	10.8
Hamilton, Ohio	63,270	100.0
In Hamilton	57,951	91.6
Outside central city	5,319	8.4
Harrisburg, Pa.	169,666	100.0
In Harrisburg	89,544	52.8
Outside central city	80,102	47.2
Hartford, Conn.	390,788	100.0
In Hartford	177,397	59.0
Outside central city	123,391	41.0
Houston, Tex.	700,508	100.0
In Houston	596,163	85.1
Outside central city	104,345	14.9
Huntington, W.Va. Ashland, Ky.	156,288	100.0
In central cities	117,484	75.2
Huntington	6,353	55.3
Ashland	31,131	19.9
Outside central cities	38,804	24.8
Indianapolis, Ind.	502,375	100.0
In Indianapolis	427,173	85.0
Outside central city	75,202	15.0
Jackson, Miss.	100,261	100.0
In Jackson	98,271	98.0
Outside Central city	1,990	2.0
Jacksonville, Fla.	242,909	100.0
In Jacksonville	204,517	84.2
Outside central city	38,392	15.8
Johnstown, Pa.	93,354	100.0
In Johnstown	63,232	67.7
Outside central city	30,122	32.3
Kalamazoo, Mich.	83,332	100.0
In Kalamazoo	57,704	69.2
Outside central city	25,628	30.8
Kansas City, Mo.	698,350	100.0
In Kansas City	456,622	65.4
Outside central city	241,728	34.6
Knoxville, Tenn.	148,166	100.0
In Knoxville	124,769	84.2
Outside central city	23,397	15.8
Lancaster, Pa.	76,281	100.0
In Lancaster	63,744	83.6
Outside central city	12,506	16.4
Lansing, Mich.	134,082	100.0
In Lansing	92,179	68.7
Outside central city	41,903	31.3
Lawrence, Mass.	112,309	100.0
In Lawrence	80,536	71.7
Outside central city	31,773	28.3
Lincoln, Nebr.	99,549	100.0
In Lincoln	98,884	99.4
Outside central city	625	0.6
Little Rock-North Little Rock, Ark.	153,643	100.0
In central cities	146,310	95.2
Little Rock	102,213	66.5
North Little Rock	44,097	28.7
Outside central cities	7,333	4.8

(See page 9 of this issue)

Urbanized area	Population	
	Number	Percent distribution
Los Angeles, Calif.	3,996,946	100.0
In Los Angeles	1,970,358	49.3
Outside central cities	2,026,588	50.7
Louisville, Ky.	472,736	100.0
In Louisville	369,129	78.1
Outside central city	103,607	21.9
Lowell, Mass.	106,661	100.0
In Lowell	97,249	91.2
Outside central city	9,412	8.8
Macon, Ga.	93,499	100.0
In Macon	70,252	75.1
Outside central city	23,247	24.9
Madison, Wis.	110,111	100.0
In Madison	96,056	87.2
Outside central city	14,055	12.8
Manchester, N. H.	84,918	100.0
In Manchester	82,732	97.4
Outside central city	2,186	2.6
Memphis, Tenn.	406,034	100.0
In Memphis	396,000	97.5
Outside central city	10,034	2.5
Miami, Fla.	458,647	100.0
In Miami	249,276	54.4
Outside central city	209,371	45.6
Milwaukee, Wis.	829,495	100.0
In Milwaukee	637,392	76.8
Outside central city	192,103	23.2
Minneapolis-St. Paul, Minn.	985,101	100.0
In central cities	833,067	84.6
Minneapolis	521,718	53.0
St. Paul	311,349	31.6
Outside central cities	152,034	15.4
Mobile, Ala.	182,963	100.0
In Mobile	129,009	70.5
Outside central city	53,954	29.5
Montgomery, Ala.	109,468	100.0
In Montgomery	106,525	97.3
Outside central city	2,943	2.7
Muskegon, Mich.	85,245	100.0
In Muskegon	48,429	56.8
Outside central city	36,816	43.2
Nashville, Tenn.	258,887	100.0
In Nashville	74,307	67.3
Outside central city	84,580	32.7
New Bedford, Mass.	125,495	100.0
In New Bedford	109,189	87.0
Outside central city	16,306	13.0
New Britain-Bristol, Conn.	123,079	100.0
In central cities	109,687	89.1
New Britain	73,726	59.9
Bristol	35,961	29.2
Outside central cities	13,392	10.9
New Haven, Conn.	244,836	100.0
In New Haven	164,443	67.2
Outside central city	80,393	32.8
New Orleans, La.	659,768	100.0
In New Orleans	570,445	86.5
Outside central city	89,323	13.5
New York-Northeastern New Jersey	12,296,117	100.0
In central cities	8,629,750	70.2
New York	7,891,957	64.2
Newark	438,776	3.6
Jersey City	299,017	2.4
Outside central cities	3,666,367	29.8
Niagara Falls, N. Y.	99,620	100.0
In Niagara Falls	90,872	93.1
Outside central city	6,748	6.9
Norfolk-Portsmouth, Va.	385,111	100.0
In central cities	293,552	76.2
Norfolk	213,513	55.4
Portsmouth	80,039	20.8
Outside central cities	91,559	23.8
Oklahoma City, Okla.	275,091	100.0
In Oklahoma City	243,504	88.5
Outside central city	31,587	11.5
Omaha, Nebr.	310,291	100.0
In Omaha	251,117	80.9
Outside central city	59,174	19.1
Orlando, Fla.	73,163	100.0
In Orlando	52,367	71.6
Outside central city	20,796	28.4
Peoria, Ill.	154,539	100.0
In Peoria	111,856	72.4
Outside central city	42,683	27.6
Philadelphia, Pa.	2,922,470	100.0
In Philadelphia	2,071,605	70.9
Outside central city	850,865	29.1
Phoenix, Ariz.	216,038	100.0
In Phoenix	106,818	49.4
Outside central city	109,220	50.6
Pittsburg, Pa.	1,532,953	100.0
In Pittsburgh	676,806	44.2
Outside central city	856,147	55.8
Pontiac, Mich.	92,573	100.0
In Pontiac	73,681	79.6
Outside central city	18,892	20.4
Port Arthur, Tex.	82,150	100.0
In Port Arthur	57,530	70.0
Outside central city	24,620	30.0
Portland, Maine	113,499	100.0
In Portland	77,634	68.4
Outside central city	35,865	31.6
Portland, Ore.	512,643	100.0
In Portland	373,628	72.9
Outside central city	139,015	27.1
Providence, R. I.	583,346	100.0
In Providence	248,674	42.6
Outside central city	334,672	57.4
Pueblo, Colo.	73,247	100.0
In Pueblo	63,685	86.9
Outside central city	9,562	13.1
Racine, Wis.	76,537	100.0
In Racine	71,193	93.0
Outside central city	5,344	7.0
Raleigh, N. C.	68,743	100.0
In Raleigh	65,679	95.5
Outside central city	3,064	4.5
Reading, Pa.	154,931	100.0
In Reading	109,320	70.6
Outside central city	45,611	29.4
Richmond, Va.	257,995	100.0
In Richmond	230,310	89.3
Outside central city	27,685	10.7
Roanoke, Va.	106,682	100.0
In Roanoke	91,921	86.2
Outside central city	14,761	13.8
Rochester, N. Y.	409,149	100.0
In Rochester	332,488	81.3
Outside central city	76,661	18.7
Rockford, Ill.	122,226	100.0
In Rockford	92,927	76.0
Outside central city	29,298	24.0
Sacramento, Calif.	211,777	100.0
In Sacramento	137,572	65.0
Outside central city	74,205	35.0
Saginaw, Mich.	105,939	100.0
In Saginaw	92,918	87.7
Outside central city	13,021	12.3
St. Joseph, Mo.	82,290	100.0
In St. Joseph	78,588	95.5
Outside central city	3,702	4.5
St. Louis, Mo.	1,400,058	100.0
In St. Louis	856,796	61.2
Outside central city	543,262	38.8
St. Petersburg, Fla.	114,596	100.0
In St. Petersburg	96,738	84.4
Outside central city	17,858	15.6
Salt Lake City, Utah	227,368	100.0
In Salt Lake City	182,121	80.1
Outside central city	45,247	19.9
San Antonio, Tex.	449,521	100.0
In San Antonio	408,442	90.9
Outside central city	41,079	9.1
San Bernardino, Calif.	135,770	100.0
In San Bernardino	63,058	46.4
Outside central city	72,712	53.6
San Diego, Calif.	432,974	100.0
In San Diego	334,387	77.2
Outside central city	98,587	22.8
San Francisco-Oakland, Calif.	2,022,078	100.0
In central cities	1,159,932	57.4
San Francisco	775,357	38.3
Oakland	384,575	19.0
Outside central cities	862,146	42.6
San Jose, Calif.	176,473	100.0
In San Jose	95,280	54.0
Outside central city	81,193	46.0
Savannah, Ga.	128,196	100.0
In Savannah	119,638	93.3
Outside central city	8,558	6.7
Schenectady, N. Y.	123,273	100.0
In Schenectady	91,785	74.5
Outside central city	31,488	25.5
Scranton, Pa.	236,076	100.0
In Scranton	125,536	53.2
Outside central city	110,540	46.8
Seattle, Wash.	621,509	100.0
In Seattle	467,591	75.2
Outside central city	153,913	24.8
Shreveport, La.	150,208	100.0
In Shreveport	127,206	84.7
Outside central city	23,002	15.3
Sioux City, Iowa	90,101	100.0
In Sioux City	83,991	93.2
Outside central city	6,110	6.8
South Bend, Ind.	168,165	100.0
In South Bend	115,911	68.9
Outside central city	52,254	31.1
Spokane, Wash.	176,004	100.0
In Spokane	161,721	91.9
Outside central city	14,283	8.6
Springfield, Ill.	97,371	100.0
In Springfield	81,628	83.8
Outside central city	15,743	16.2
Springfield, Mo.	75,549	100.0
In Springfield	66,731	88.3
Outside central city	8,818	11.7
Springfield, Ohio	82,284	100.0
In Springfield	78,508	95.4
Outside central city	3,776	4.6
Springfield-Holyoke, Mass.	356,908	100.0
In central cities	217,060	60.8
Springfield	162,399	45.5
Holyoke	54,661	15.3
Outside central cities	139,848	39.2
Stamford-Norwalk, Conn.	173,536	100.0
In central cities	123,753	71.3
Stamford	74,293	42.8
Norwalk	49,460	28.5
Outside central cities	49,783	28.7

Distribution of Population in Urbanized Areas: 1950

(Continued from page 123)

Urbanized area	Population	
	Number	Percent distribution
Stockton, Calif.	112,834	100.0
In Stockton	70,853	62.8
Outside central city	41,981	37.2
Syracuse, N. Y.	265,286	100.0
In Syracuse	220,583	83.1
Outside central city	44,703	16.9
Tacoma, Wash.	167,667	100.0
In Tacoma	143,673	85.7
Outside central city	23,994	14.3
Tampa, Fla.	179,335	100.0
In Tampa	124,681	69.5
Outside central city	54,654	30.5
Terre Haute, Ind.	78,028	100.0
In Terre Haute	64,214	82.3
Outside central city	13,814	17.7
Toledo, Ohio	364,344	100.0
In Toledo	303,616	83.3
Outside central city	60,728	16.7
Topeka, Kans.	89,104	100.0
In Topeka	78,791	88.4
Outside central city	10,313	11.6
Trenton, N.J.	189,321	100.0
In Trenton	128,009	67.6
Outside central city	61,312	32.4
Tulsa, Okla.	206,311	100.0
In Tulsa	182,740	88.6
Outside central city	23,571	11.4
Utica, N.Y.	117,424	100.0
In Utica	101,531	86.5
Outside central city	15,893	13.5
Waco, Tex.	92,834	100.0
In Waco	84,706	91.2
Outside central city	8,128	8.8
Washington, D. C.	1,287,333	100.0
In Washington	802,178	62.3
Outside central city	485,155	37.7
Waterbury, Conn.	131,707	100.0
In Waterbury	104,477	79.3
Outside central city	27,230	20.7
Waterloo, Iowa	84,386	100.0
In Waterloo	65,198	77.3
Outside central city	19,188	22.7
Wheeling, W. Va.	106,650	100.0
In Wheeling	58,891	55.2
Outside central city	47,759	44.8
Wichita, Kans.	194,047	100.0
In Wichita	168,279	86.7
Outside central city	25,768	13.3
Wilkes-Barre, Pa.	271,589	100.0
In Wilkes-Barre	76,826	28.3
Outside central city	194,763	71.7
Wilmington, Del.	187,359	100.0
In Wilmington	110,356	58.9
Outside central city	77,003	41.1
Winston-Salem, N. C.	92,477	100.0
In Winston-Salem	87,811	95.0
Outside central city	4,666	5.0
Worcester, Mass.	219,330	100.0
In Worcester	203,486	92.8
Outside central city	15,844	7.2
York, Pa.	78,796	100.0
In York	59,953	76.1
Outside central city	18,843	23.9
Youngstown, Ohio	298,051	100.0
In Youngstown	168,330	56.5
Outside central city	129,721	43.5

Rank of Urbanized Areas According to Population: 1950

Rank	Urbanized Area	Population
1	NEW YORK-NORTHEASTERN New Jersey	12,296,117
2	Chicago, Ill.	4,920,816
3	Los Angeles, Calif.	3,996,946
4	Philadelphia, Pa.	2,922,470
5	Detroit, Mich.	2,659,398
6	Boston, Mass.	2,233,448
7	San Francisco-Oakland, Calif.	2,022,078
8	Pittsburgh, Pa.	1,532,953
9	St. Louis, Mo.	1,400,058
10	Cleveland, Ohio	1,383,599
11	Washington, D.C.	1,287,333
12	Baltimore, Md.	1,161,852
13	Minneapolis-St. Paul, Minn.	985,101
14	Milwaukee, Wis.	829,495
15	Cincinnati, Ohio	813,292
16	Buffalo, N. Y.	798,043
17	Houston, Tex.	700,508
18	Kansas City, Mo.	698,350
19	New Orleans, La.	659,768
20	Seattle, Wash.	621,509
21	Providence, R. I.	583,346
22	Dallas, Tex.	538,924
23	Portland, Ore.	512,643
24	Atlanta, Ga.	507,887
25	Indianapolis, Ind.	502,375
26	Denver, Colo.	498,743
27	Louisville, Ky.	472,736
28	Miami, Fla.	458,647
29	San Antonio, Tex.	449,521
30	Birmingham, Ala.	445,314
31	Columbus, Ohio	437,707
32	San Diego, Calif.	432,974
33	Rochester, N. Y.	409,149
34	Memphis, Tenn.	406,034
35	Norfolk-Portsmouth, Va.	385,111
36	Akron, Ohio	366,765
37	Toledo, Ohio	364,344
38	Springfield-Holyoke, Mass	356,908
39	Dayton, Ohio	346,864
40	Fort Worth, Tex.	315,578
41	Omaha, Nebr.	310,291
42	Hartford, Conn.	300,788
43	Youngstown, Ohio	298,051
44	Albany-Troy, N. Y.	291,897
45	Oklahoma City, Okla.	275,091
46	Wilkes-Barre, Pa.	271,589
47	Syracuse, N. Y.	265,286
48	Nashville, Tenn.	258,887
49	Richmond, Va.	257,995
50	New Haven, Conn.	244,836
51	Jacksonville, Fla.	242,909
52	Bridgeport, Conn.	237,435
53	Scranton, Pa.	236,076
54	Salt Lake City, Utah	227,368
55	Grand Rapids, Mich.	226,817
56	Allentown-Bethlehem, Pa.	225,962
57	Worcester, Mass.	219,330
58	Phoenix, Ariz.	216,038
59	Sacramento, Calif.	211,777
60	Tulsa, Okla.	206,311
61	Des Moines, Iowa	199,934
62	Flint, Mich.	197,631
63	Davenport, Iowa-Rock Island-Moline, Ill.	194,925
64	Wichita, Kans.	194,047
65	Trenton, N. J.	189,321
66	Wilmington, Del.	187,359
67	Mobile, Ala.	182,963
68	Tampa, Fla.	179,335
69	San Jose, Cal.	176,473
70	Spokane, Wash.	176,004
71	Canton, Ohio	173,917
72	Stamford-Norwalk, Conn.	173,536
73	Harrisburg, Pa.	169,646
74	South Bend, Ind.	168,165
75	Chattanooga, Tenn.	167,764
76	Tacoma, Wash.	167,667
77	Huntington, W. Va.-Ashland, Ky.	156,288
78	Reading, Pa.	154,931
79	Peoria, Ill.	154,539
80	Little Rock-North Little Rock, Ark.	153,643
81	Erie, Pa.	151,710
82	Shreveport, La.	150,208
83	Knoxville, Tenn.	148,166
84	Binghamton, N. Y.	144,011
85	Duluth, Minn-Superior, Wis.	143,028
86	Charlotte, N. C.	140,930
87	Fort Wayne, Ind.	140,314
88	Baton-Rouge, La.	138,864
89	Evansville, Ind.	137,573
90	El Paso, Tex.	136,918
91	Austin, Tex.	135,971
92	San Bernardino, Calif.	135,770
93	Lansing, Mich.	134,052
94	Waterbury, Conn.	131,707
95	Charleston, W. Va.	130,914
96	Fresno, Calif.	130,592
97	Savannah, Ga.	128,196
98	New Bedford, Mass.	125,495
99	Schenectady, N. Y.	123,273
100	New Britain-Bristol, Conn	123,079
101	Corpus Christi, Tex.	122,956
102	Rockford, Ill.	122,226
103	Columbia, S.C.	120,808
104	Charleston, S.C.	120,289
105	Columbus, Ga.	93,499
106	Fall River, Mass.	93,354
107	Utica, N. Y.	92,834
108	St. Petersburg, Fla.	92,573
109	Portland, Maine	92,477
110	Stockton, Calif.	92,116
111	Lawrence, Mass.	90,101
112	Madison, Wis.	89,104
113	Montgomery, Ala.	87,733
114	Roanoke, Va.	86,614
115	Lowell, Mass.	85,245
116	Wheeling, W. Va.	84,918
117	Saginaw, Mich.	84,386
118	Atlantic City, N. J.	83,412
119	Jackson, Miss.	83,332
120	Lincoln, Nebr.	82,290
121	Niagara Falls, N. Y.	82,284
122	Springfield, Ill.	82,150
123	Beaumont, Tex.	78,796
124	Macon, Ga.	78,212
125	Johnstown, Pa.	78,028
126	Waco, Tex.	76,537
127	Pontiac, Mich.	76,280
128	Winston-Salem, N. C.	75,549
129	Brockton, Mass.	74,443
130	Sioux City, Iowa	73,713
131	Topeka, Kans.	73,368
132	Augusta, Ga.	73,247
133	Altoona, Pa.	73,163
134	Muskegon, Mich.	71,527
135	Manchester, N. H.	68,743
136	Waterloo, Iowa	63,270
137	Greensboro, N. C.	58,437
138	Kalamazoo, Mich.	56,046
139	St. Joseph, Mo.	118,485
140	Springfield, Ohio	118,120
141	Port Arthur, Tex.	117,424
142	York, Pa.	114,596
143	Cedar Rapids, Iowa	113,499
144	Terre Haute, Ind.	112,834
145	Racine, Wis.	112,309
146	Lancaster, Pa.	110,111
147	Springfield, Mo.	109,468
148	Amarillo, Tex.	106,682
149	Decatur, Ill.	106,661
150	Durham, N. C.	106,650
151	Pueblo, Colo.	105,939
152	Orlando, Fla.	105,083
153	Galveston, Tex.	100,261
154	Raleigh, N. C.	99,509
155	Hamilton, Ohio	97,620
156	Asheville, N. C.	97,371
157	Fort Smith, Ark.	94,169

Getting and *Keeping* Good Employees

By TERRELL BLODGETT, *Personnel Director, City of Austin, Texas*
President, Association of City Personnel, Civil Service Officials of Texas

IS YOUR city attracting competent employees, or are you being forced to take leftovers from the labor market? This question has not yet been completely answered in Austin, but the city is taking definite steps to assist its departments in obtaining and retaining capable workers.

Management people generally agree that to maintain a stable working force, an organization must (1) pay adequate wages; (2) supplement its pay by such fringe benefits as properly reward a person for service and utilize the purchasing power of the organization to aid the employee in buying protection from some of life's hazards; and (3) provide reasonable working conditions.

Governmental agencies, especially on the state and local level, have often taken care of the latter two items without first trying to establish an adequate pay scale. Perhaps they have relied on employee surveys showing that employees are sometimes more interested in good working conditions, retirement systems, and the like than they are in the pay of a job. For example, we like to think that persons will come to Austin to work because they like to live here. We have instances of people remaining with the city who could draw much higher salaries elsewhere. But we are beginning to realize that this "non-monetary factor" will stretch only so far, and that we must have a decent pay scale to offer employees.

Three primary moves have been made by the City of Austin to provide better as well as more equitable working conditions for its 2,000 employees.

Wage and Salary Program

● For several years, department heads had felt the necessity of a survey which would examine the jobs being done in the city with a view toward establishing an equitable and formal pay scale—one which would reward truck drivers with similar duties in different departments with similar pay. Department heads realized, too, that the city's pay scale needed a close examination relative to its place in the over-all labor-market picture. With these thoughts in mind, the City Council, late in 1949, authorized a classification survey and instructed the City Manager to proceed with the project. Six management consulting firms were contacted, interviews held, and bids taken. The interviewing committee recommended to the City Council that Management Service, Inc., of Houston, be employed for the project, and this was approved.

An entire year went into the development and installation of our wage and salary program. This included interviewing employees to find out their duties, writing up their jobs, and, finally, sending the job descriptions to the evaluation committee of seven city employees who rated the jobs. A book could be written about the participation of our city employees in the project; suffice it to say that they enjoyed it and we believe that they and the city are much better for it.

Our end result is a wage and salary program which is based on full job descriptions and formalized in a wage schedule, supported by an ordinance which sets forth the broad objectives and features of the plan.

Group-Insurance Program

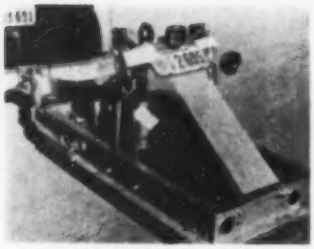
● While all this was going on, the city was making two other moves to strengthen its employee relations. A group-insurance committee of five city employees had been meeting with insurance representatives for several months, attempting to evolve a satisfactory plan of group life, disability, and hospitalization insurance for city employees. Bids were taken in December 1950, and on January 1, 1951, an extensive insurance program went into effect.

City employees now receive $1,000 life insurance and $6,000 accidental death and dismemberment coverage the day they begin work. After six months' employment, they receive a hospitalization policy which includes a $7-a-day room for 31 days, $140 in hospital extras, and a $225 surgical schedule. In addition, they may insure their dependents for hospitalization at a small monthly cost.

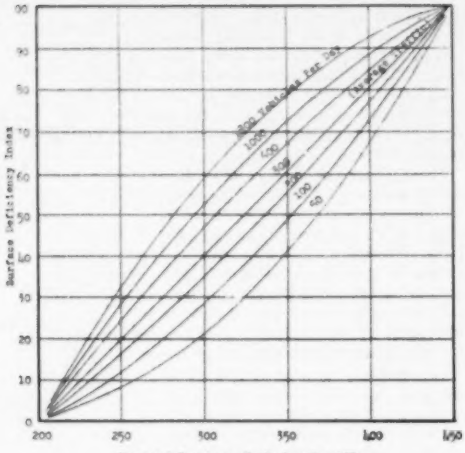
Improved Retirement System

● The city administration was also interested in improving the retirement system, which was established in 1941. Conferences were held and the City Council adopted amendments which increased the benefits and coverage considerably. Employees now on retirement were given advantage of the more complete coverage and their monthly retirement checks are now about 20% higher than before the amendments. Features of the amendments include: (1) deposits are now based on $400 monthly salary instead of $200; (2) normal retirement age is retained at 65, but provision is made for 20-year retirement at age 55, and 30-year retirement regardless of age; (3) disability retirement is provided for; (4) four optional methods of drawing retirement allowance are granted, rather than only the straight life annuity.

Finally, the city administration realizes that to secure and retain good employees, working conditions and pay policies must be clearly set forth and understood. It is with this thought in mind that work is progressing now on an employee manual, designed to inform every employee, present and future, of the job-evaluation program and vacation, sick-leave, overtime, and similar policies.



The "Roughometer" is towed easily behind a passenger car.



This surface-deficiency chart is based on the formula carried in the text below.

Berkeley, Calif., uses priority system based on roughness of street and traffic counts to schedule street-maintenance work

How to Decide What Street to Resurface

WHAT'S the answer when a resident calls and asks why his neighbor in the next block is getting a nice new street and he isn't, and he has always paid his taxes promptly when he knows for certain that his neighbor hasn't?

The easiest answer, and for that matter, the fairest, according to Richard Gallagher, Director of Public Works at Berkeley, Calif., is to schedule the work according to a priority system based on the measured roughness of the street surface and the measured volume of traffic the street carries. Mr. Gallagher explained this at the recent American Public Works Association Congress held in Detroit.

Machine for Measuring

The machine that measures the roughness of the pavement is called a "Roughometer," and is patterned after the road-roughness indicator originally designed by the United States Bureau of Public Roads. This machine measures the roughness in inches of vertical difference per mile. The machine was made available to Berkeley through the courtesy of the University of California's Institute of Transportation and Traffic Engineering. With the cooperation of Professors Harmer E. Davis and Ralph Moyer, a joint research project was established and the machine put into operation on the streets with crews composed of representatives of the University and the Department of Public Works.

The rating of the streets was grouped as follows:

Roughness Index (Inches/Mile)	*Riding Qualities*	*% of Total*	*Miles*
Below 125	Excellent	2.7	5.4
125—200	Good	14.7	29.4
200—300	Fair	28.3	56.6
300—450	Rough	49.9	99.8
Above 450	Very rough	4.4	8.8

The top figure of 450 inches per mile was established as the upper limiting value of roughness. Any street with this roughness received top priority. Likewise, 200 inches per mile was established as the lower limiting value. Between the two, the priority was adjusted according to the following formula:

$$I = B - \frac{B^2 - 100B\ (\log T - \log T\ ave.)}{97.5}$$

where I = Surface Deficiency Index

B = Deficiency based on roughness alone or $\frac{\text{Roughness} - 200}{2.5}$

T = Traffic volume for a given street in vehicles per day

T ave. = Average traffic volume (300 vehicles per day)

This formula is reduced to graph form in the accompanying diagram. Traffic counts are kept up to date in Berkeley by the Traffic Engineering Division. It was developed by Carl Moskowitz of the California Division of Highways.

The value of the resurfacing program can be indicated by the fact that streets registering 450 to 460 inches per mile showed only 210 to 260 after resurfacing.

Thus, at a cost of approximately 2¼ cents per square foot, these streets have been changed from a "very rough" category to a "good" or a "fair" classification.

Mr. Gallagher felt that any large city would be justified in owning a Roughometer and that several small cities would find it advantageous to own one collectively.

To Make City-Owned Cemeteries Self-Supporting

THE National Cemetery Association, at its recent meeting in Louisville, Ky., adopted a resolution calling attention to the fact that many city-owned cemeteries are using tax moneys to make up operating deficits.

Pointing out that these deficits generally result from the sale of burial rights and services below cost, the resolution urged that managers and governing bodies of city-owned cemeteries, as a matter of good policy, do all within their power to keep these cemeteries on a paying basis and without using city funds to make up deficits; and that, to produce this desired result, cemetery prices for lots and services of city-owned cemeteries be on a level with other cemeteries in the locality.

She photographs the pages fast as she turns them

SINCE 1947 Kent County (Michigan) has been using Recordak microfilming on an extensive scale to protect valuable records . . . to save 98% in filing space . . . and to simplify reference.

The Microfilm Department is now photographing records for the County Clerk, the County Controller, the Probate Court, the Sheriff, and several other departments.

Many of these records are in bound volumes. But photographing them is no problem with the Recordak Model D Micro-File Machine, which you see in use.

Every time the operator turns a page, she depresses a convenient foot pedal. *Just this simple operation*—and a photographically accurate and complete record of the two facing pages is obtained. As a result, the operator whisks through her work . . . recording documents in "bound volume" sequence—unhampered by the task of removing pages—and possibly misfiling them.

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Typical cross section of documents now being put on Recordak microfilm in Kent County Recorder's Office

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- Bank statements
- Birth certificates
- Cases in Justice Court
- Cash receipts
- Certificates of conviction
- Daily cash balances
- Death records
- Deeds
- Journals
- Ledger sheets
- Marriage records
- Mortgages
- Payroll checks paid
- Probate court calendars
- Receipts
- Register of warrants paid
- Revenue vouchers
- Special orders, decrees
- Tax sales notices
- Transfer vouchers
- Treasurer's receipts
- Vouchers paid
- Wills

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THE Prismo Reflecto-Kit is a revolutionary new reflective material for use on all traffic signs . . . combining an improved plastic binder and finer, more efficient reflective spheres. The crystal spheres are evenly graded, consequently covering the surface with a greater number of uniform reflective units. Reflecto-Kit material can be applied to all surfaces, regardless of contour, either in the field or in the shop by either silk screen, roller coating, brush or spray method.

The ease of application, permanency and economy recommends the Reflecto-Kit above all other reflective materials.

Reflecto-Kit comes in a wide range of colors, which will fulfill every possible road sign requirement.

Field and Laboratory tests prove beyond a doubt that Reflecto-Kit is the *very best* reflective material you can use when you want the most brilliant flash.

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Write today for complete information on the most versatile reflective road sign marking material.

The SPHERE of SAFETY

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HUNTINGDON, PENNA.

Evolution of Detroit's Famous Traffic-Signal System

By HOLDEN LeROY
Senior Associate Traffic Engineer
Detroit, Mich.

MY experience has indicated that of the 56,000,000 "traffic engineers" driving cars there are few who do not hold that there is no problem involving traffic which cannot be corrected by the installation of a traffic signal. We once had a man request a signal installation so the corner would look busier and make it possible for him to rent his vacant store. Signals, unless properly installed and under the necessary warrants, can result in a worse condition than previously existed. When properly used, however, traffic signals are one of the most valuable and effective tools which the traffic engineer has at his disposal in expediting and safeguarding traffic flow.

To Meet the Problem

I should like to discuss first some of the ways in which Detroit made old equipment meet the traffic problems better during the war years. It has often been said that the streets in Detroit are a very real part of the assembly lines of our factories. The plants of many firms are scattered over the metropolitan area and partially fabricated parts are trucked from plant to plant. In addition to this, the workers who are employed on one side of town all seem to live on the other and vice versa. Very large peaks of traffic occur on all major arteries when shifts change.

Detroit, like many cities, had been more or less coasting along in signal work owing to the difficulty of getting officials to appropriate sufficient funds. Most of our signal equipment was, at that time, from 15 to 20 years old and much of it was induction-motor driven and operating without interconnection or master supervision. This resulted in a hit-or-miss type of operation on the streets and many needless stops.

Obtaining new control equipment and interconnecting cable was virtually impossible because of shortages, priorities, etc. It became necessary to develop makeshifts to cut waste of time, gasoline, and rubber. The first problem was to obtain synchronous operation of this control equipment in order to make possible the progressive timing of signals along the streets. Almost all of this equipment was the induction-disc-motor type wherein the disc was driven during each period of the cycle by different driving coils. A small, synchronous, two-circuit time switch was connected into the circuit of this controller so that the cycle and percentage split between the two streets was established thereon and the induction motor became merely a switching device to change the colors. In other words, each local controller was, in effect, equipped with its own synchronous master. These devices, being synchronous, hold a fixed relationship to each other along a street unless a power interruption occurs.

Another difficulty frequently encountered in setting up progressive timing through a series of non-interconnected signal controll rs is the cumulative error in establishing offsets between controllers as you move along the street. Accurate setting of offsets is important in timing a progressive system. The human error in operating the stop watch when accumulated through several signals may amount to enough to throw off progression in the reverse direction. Also, difficulty arises often in the inability to see one signal from the other where distances are large or a turn in the roadway intervenes.

The only way to overcome this is to refer all offsets to a common reference point rather than to an adjacent location. To accomplish this, a series of gongs was established in the maintenance shop; one for each cycle length in operation in the city. These were operated by synchronous timers so as to ring once each cycle. All offsets on the street were established as a given number of seconds after the proper time signal. These time signals could be picked up over either the Bell or police-telephone system, and the timings established therefrom. This permitted very accurate timing of offsets and considerably improved movement of traffic. Beneficial results were obtained in setting up progression on streets where signals were even a half-mile or a mile apart. This, of course, is considerably over the generally considered maximum of around 1,200 feet. It was found that the through platoons of traffic on the street fitted quite well into the signal timing and were required to make fewer stops.

During this same p riod of time maintenance procedures were established and improved to provide for greater continuity in the operation of signals. It has been the opinion of those responsible in Detroit that if a signal is to control a given location everything possible should be done to assure proper operation. A routine relamping and cleaning schedule is followed, which replaces each lamp short of its normal rated life. Sixty-watt traffic-signal bulbs with a rated life of 2,000 hours are used. This has resulted in an average daily intermediate burn-out rate of only about eight lamps out of a total of over 23,000 in operation. All signals are either operating in a "go-stop" sequence or as flashers, which removes any doubt from the driver's mind as to whether a signal is out of order or intentionally not operating.

Routine inspection and tests of all control equipment at regular intervals is also made to discover the source of potential trouble. All of this has resulted in a well-operated system on our streets. As stated, during the war years this was of considerable value in the war effort. It was valuable experience.

At the end of the war we were far behind in modernizing and replacing obsolete equipment as well as in the installation of needed new signalization. We are still attempting to catch up. The traffic index, which in Detroit was 100 in 1941 and 78 in 1944, has risen to 138 today. This has increased the need and demand for new and improved signalization. Before and during the war we were operating on a signal budget of $100,000 per year. We have reached this year a budget of $735,000 for traffic-signal work consisting of (1) new installations; (2) improvement of signal visibility, and (3) modernization of old control equipment.

Suspended Signals

The great increase in use of large buses, trucks, etc., has made inadequate the corner-post or curb-mounted signal as a sole traffic-control device. They cannot be seen from a distance for intelligent driving and are often hidden

Jamestown, too, prefers

DUAL CONTROLLED PARKING

. . . on-street . . . off-street

Dual on-street installation, Jamestown, N. Y.

ADD another success story to Dual's long list . . . Jamestown, N. Y. It started in 1940, when 225 Dual Automatics were installed. So were 225 of another make. Several years' experience showed that Duals did such a fine job that the other makes were replaced with Duals. And, 325 *more* Duals were installed.

In 1951, 346 Dual *Convertible Gearshift* Meters were installed. Now, there are 1,121 Duals helping control Jamestown parking—both on-street and off-street.

Duals have won preference in city after city—hundreds of them—from coast-to-coast. For Duals prove their worth easily. Ruggedly built, they operate dependably in any weather. They've set records for low-cost maintenance—for steady, high revenue. And Dual *gearshift* meters allow *flexible* parking control, through time-and-coin conversions made on-the-spot.

Get the facts—see why Dual gives more in satisfaction—more in economical metered parking. Send for Bulletin DU-521 for on-street parking; Bulletin DU-522 for off-street parking.

Dual installation in Jamestown municipal parking lot.

THE DUAL PARKING METER COMPANY
A subsidiary of The Union Metal Manufacturing Company
Canton 2, Ohio

from view at the most strategic instant, thus causing unintentional red-light violations.

To overcome this condition, Detroit supplements these curb signals with over-the-roadway signals mounted on mast arms or span wires. For the most part two overhead indications have been installed for each direction of travel, with sufficient curb signals to provide adequate indications for pedestrians. It is felt that where any volume of pedestrian traffic is present, an indication should be placed at each end of each crosswalk so the pedestrian can see the signal without having to look away from his normal line of travel.

All new installations have been made on this basis. A program of thus modernizing old installations has been carried on each year as appropriations would allow. Plans now being prepared call for treating in this manner the remaining 345 intersections during the next four years at a cost of about $1,300,000. Has this policy proved its worth?

Before-and-After Study

A before-and-after study of accidents was made at 40 locations where new mast-arm vehicle indications had been added and some curb indications changed. A year's statistics showed a 40% reduction in right-angle accidents, and a 36% reduction in pedestrian accidents. During this same year volume was steadily increasing and the city-wide accident rate had increased 18%. Since then, a considerable number of intersections have dropped from high on the list of 25 worst-accident locations to well below the bottom of that list with the entire credit due to signal improvements.

At first, considerable criticism was voiced over the "Christmas-tree" effect but this has generally subsided and more and more requests are now being received along this line. The results have not been only accident reduction. The ability to see approaching signals from some distance away enables more intelligent driving, with fewer stops and quicker starts and reduced congestion.

The third step in Detroit's program involves the modernizing of control equipment, most of which is 20 years old or more. It is completely inflexible and inadequate to meet present-day traffic needs even after receiving the interim war-time treatment previously described.

This program involves, on major arteries, the installations of triple-offset, multi-dial equipment connected to a flexible master control and program device. In other locations single-dial equipment, usually equipped with triple-offset, is used. In many cases this will be interconnected, but not in all. The use of this type of equipment makes it possible to fit signal operation to changes in the traffic pattern and thus make more efficient use of the street system.

A flexible progressive system has been installed on Woodward Avenue and several adjacent streets forming a grid embracing 37 intersections. Controllers equipped with two dials with possible expansion to three were used. Triple-offset is provided on each dial. During the base periods a 50-second cycle is used with two-way progression. During the rush hours the cycle is increased to 70 seconds with progression set to favor completely the direction of heavy flow. The whole system is interconnected to a synchronous master controller which is equipped with a weekly program drum. By proper use of this program drum, changes in the traffic pattern on holidays and for other special events can be cared for.

Our plans for the current fiscal year call for installation of similar equipment in our entire downtown loop area, consisting of some 140 intersections. These will be supervised by two master controllers and cascade relay stations, all tied together. The principal difference in this system will be the inclusion of the third dial from the start. This is being done to make possible the shift to a longer-than-normal cycle on icy, slippery days when driving and starting speeds are of necessity slower. The shift to the long cycle will be made with no change from normal in offsets.

This was done one slippery winter day on the first progressive system described. Where congestion and delay existed on almost all other thoroughfares, conditions were here normal.

In Detroit we have started using neon "Walk" and "Don't Walk" signals, timed specifically to fit pedestrian walking speeds. During the last three years many more have been installed. These are operated on a three-period basis: "Walk," flashing "Don't Walk," and steady "Don't Walk." The duration of the flashing "Don't Walk" period is the time required for a pedestrian to walk from curb to curb at about four feet per second; in other words, a clearance period. A pedestrian can leave the curb any time during the walk period and safely reach the far curb. If he is in the street when it starts to flash he still has time to complete his crossing. He is given a plainly visible signal.

We have used these at many school crossings as well as others with marked success. In fact, we are beginning to receive many requests for them at heavy pedestrian points. Some confusion as to its meaning has resulted when installations were new. This has soon straightened itself out when people became familiar with the signal. This could be overcome if it were feasible to use a third message for the clearance period.

With continuing increases in traffic volumes and practically constant street capacity it is essential to make the most efficient use of our streets. A street is no more efficient than its intersections, and a signal automatically reduces the capacity of an intersection for the through street. Every effort should, therefore, be used to have efficient, properly installed signals.

Editor's Note: The text for this article is from a paper delivered at a New England Seminar at Massachusetts Institute of Technology, Cambridge, Mass., on November 13 and 14, 1951, and sponsored jointly by the Eagle Signal Corporation and the Massachusetts Department of Public Works.

"Traffic seems heavier than usual tonight."

In Wilkes-Barre, Pennsylvania:

CONVERSIONS TO TROLLEY COACHES RESULT IN 5-12% RIDING INCREASE

Wilkes-Barre Transit Corporation's modernization program, begun in 1939, has resulted in improved service, increased riding. In the twelve years since conversion, modern efficient trolley coaches have played a key role in Wilkes-Barre transit progress.

Wilkes-Barre's original 17 trolley coaches, placed in service 12 years ago, are still in service, still making money. Since the Wilkes-Barre Transit Corporation's modernization program was begun in 1939, an additional 51 trolley coaches have been added to the fleet. Public acceptance has gone hand in hand with each decision by the Wilkes-Barre Transit Corporation to convert lines to trolley coaches. After each conversion, riding increased 5 to 12% on the modernized line.

Along with passenger acceptance, management's appreciation of trolley-coach reliability, low operating costs and simplified maintenance has contributed to the growth of the fleet. *General Electric Company, Schenectady 5, New York.*

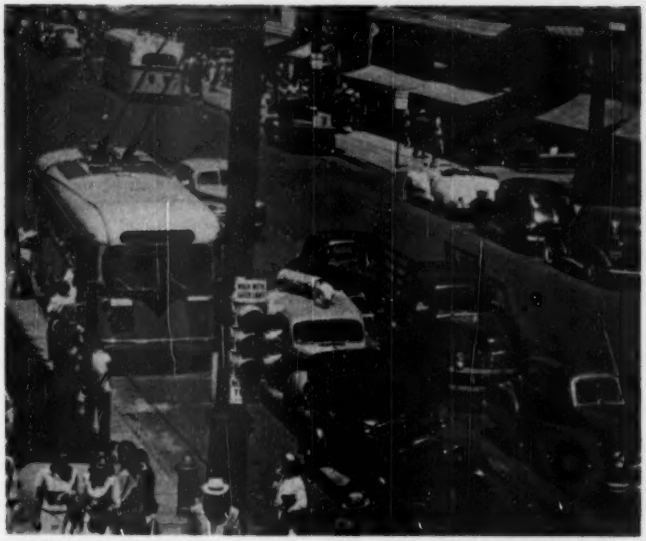
Here are the latest available figures in the Wilkes-Barre story of trolley-coach profits:

NET PROFIT PER REVENUE PASSENGER		
	Gas Buses	Trolley Coaches
Total Revenue	.0987	.1006
Total Expenses	.0927	.0809
Net Profit	.0060	.0197

GENERAL ELECTRIC

Electric Transit in Civil Defense

The trolley coach asks no favors in traffic.



Public-transit operators are facing the job of maintaining and bettering their operation in spite of increased mobilization and greater civil defense demands.

By R. J. DeMUTH
Locomotive and Car Equipment Dept.
General Electric Company,
Erie, Pa.

EXPERIENCE during World War II indicates that a transit company with a substantial fleet of electrically propelled vehicles is in the best position to move travel-conscious Americans rapidly and efficiently with a minimum draw on defense resources. A continuous shift in population has brought about extensive settlement in suburban areas, and many Americans have already found public transit to be the fastest and cheapest way of getting from their homes to offices, schools, factories, and stores. In some cities, nearly 90% of all workers entering the downtown area arrive by public transit. But in many smaller cities, a majority of citizens are still attempting to use automobiles.

In our stepped-up economy, the total labor force is being expanded as many women and marginal workers are drawn into defense production. This means that more and more people are traveling during the peak hours from 7 to 9 in the morning and from 4 to 6 in the evening. The use of private transportation facilities may be curtailed in order to speed and increase military production. This will tend to shift the riding habit from private vehicles to public transit lines.

Transit vehicles carried 13,000,000,000 passengers in 1940. Four years later, with gasoline and tire rationing in full effect, they carried 23,000,000,000 passengers, despite the fact that very few new vehicles were available.

With the outbreak of the trouble in Korea, the American Transit Association cancelled its annual convention at Los Angeles and set up a War Planning Committee.

Many transit operators feel that mobilization and civil defense may mean more than transportation between home and industry during a period of gasoline and tire rationing. Transportation companies may have the job of moving troops and defense workers from city to city, and may be an important factor in evacuation. Private cars would be placed under the control of transit officials to coordinate the movement. But the basic job of the transit industry is to maintain a sufficient fleet of vehicles for transporting workers in production.

How Ready Is Transit?

How is public transit equipped and staffed to handle the increased load of our defense economy? The lessons learned during World War II are still fresh in the minds of most transit operators. The question mark centers on equipment. Although most operators have been modernizing their fleets during the last five years, in numerous cases progress has been slowed for financial reasons. Cooperative methods of financing give hopeful indications of overcoming this obstacle.

Electrically propelled vehicles are relatively unaffected by scarcities of critical materials. Add to the credit column electrical equipment's long life and low maintenance cost. The trolley coach, too, has been enjoying a growing popularity, its number more than doubling in the last ten years. Today there are more than 7,000 of these vehicles in operation in the United States.

Operating companies in 42 cities, ranging in population from 70,000 to over 2,000,000 people, have trolley-coach fleets in daily service. Most of these companies are realizing a greater profit from trolley coaches than from other types of public-transportation facility.

Mobilization and civil defense highlight the importance of reliability and economy in transit vehicles. The electrically propelled vehicle is capable of playing a leading part in the essential task of moving Americans rapidly and efficiently in harmony with increased national demands.

HOW MUNICIPALITIES AND UTILITIES HANDLE

Street-Lighting Rates

Why rates vary all over the lot and comparisons mean so little

By H. I. MILLER, *Manager Rates and Research Department Wisconsin Public Service Commission Oshkosh, Wis.*

STREET lighting has long been a close common interest of utilities, or utility departments, and municipalities. It has been and will continue to be an integral part of community planning and development, safety and traffic programs, law enforcement, and civic progress generally. But unfortunately, street-lighting rates are not generally understood. This is historical.

Most charges for street-lighting service in Wisconsin communities were originally a part of individual contracts between a particular utility and the city involved. These contracts were dependent on widely different situations. Very often they were a part of the original franchise agreement by which the utility served in a locality; and some very fancy ordinance provisions once spelled out the terms of street-lighting service, sometimes without too much relation to the full cost of rendering the service. But since the advent of the indeterminate permit form of statewide regulation under our Public Service Commission in Wisconsin, there has been a trend toward uniform and standard rates within utilities. There is still a wide variation in forms of rates among the various major utilities and among the many municipal utility systems, but the approach in all cases is an attempt to measure the cost of the service as accurately and simply as possible. Just as the street-lighting systems themselves have grown from groups of small neglected lamps to modern systems involving large investments, so have street-lighting rates developed from hit-and-miss special charges to a more accurate measure of the cost of street-lighting service.

No Basis for National Comparison

In 1947, the Federal Power Commission attempted to make a comparison of street-lighting costs in cities with a population of 50,000 or more. They came to the conclusion that there was no satisfactory basis for comparison. Of the 200 cities surveyed, no schedules were available for 21 of them—there were 10 private utilities with special contracts containing no rate data and 11 municipalities without published schedules. Of the 179 cities with published rate schedules where the cost per lamp data could be computed, the ratio in cost from the highest to the lowest was on the order of 4 to 1. The Federal Power Commission concluded "lack of uniformity in the division of ownership of facilities and in the division of operating and maintenance expenses between the utility, the city, the property owner, and residents in the area precluded the presentation of data on net annual charges per lamp for street-lighting service. Numerous factors, covering the cost of electric service and differences in the street-lighting service rendered, operate to bring about differences in unit cost and in rate levels."

The same problem exists in attempting to compile statistical data for Wisconsin communities. Our Public Service Commission issues an annual bulletin comparing the unit revenues for the various general classes of service among all the utility systems in Wisconsin, but this bulletin makes no attempt to compare street-lighting revenues. This discussion will review the underlying factors and give some illustrations as to how various utilities and municipalities handle the problem.

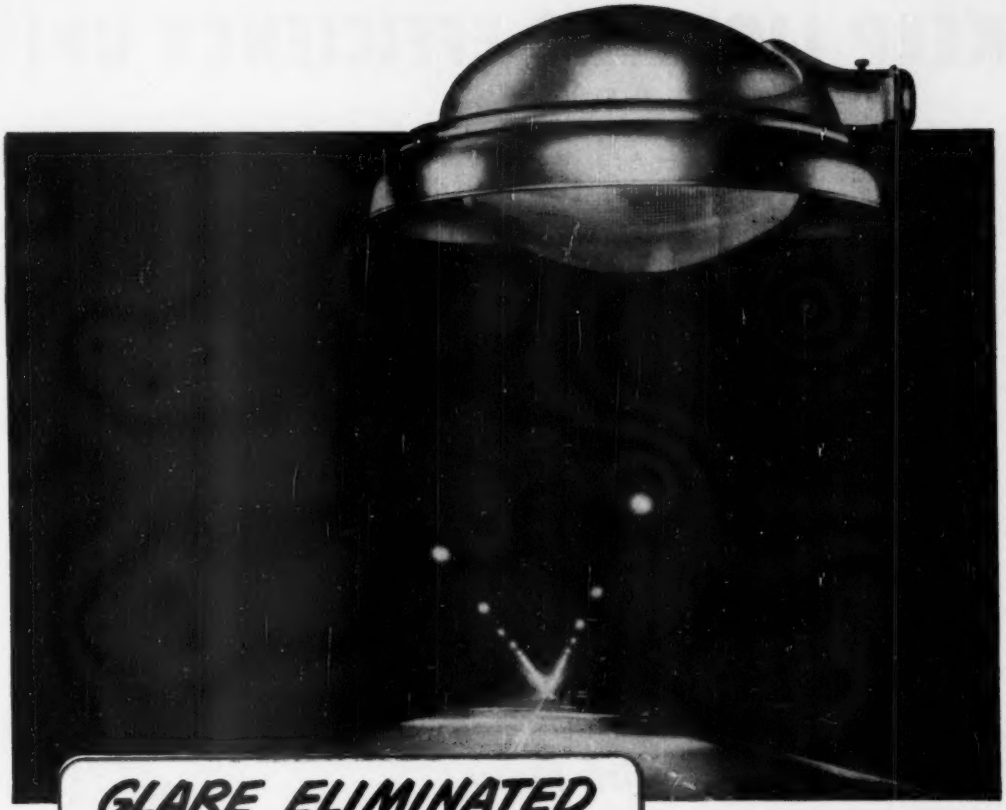
Street-lighting service is similar to other utility service in that it is subject to regulation by the Public Service Commission of Wisconsin. Street-lighting rates are governed by the general rule that they must be "reasonable and non-discriminatory." Briefly, this means that they must bear a close relationship to the cost of rendering the service; rates for street lighting cannot be "subsidized" by other classes of utility service, nor can they be excessive.

A peculiar situation in regard to street-lighting service is that in addition to the charge for electricity, the rate schedule very often covers the cost of furnishing, operating, and maintaining the equipment itself. This is not the general case in furnishing electric-utility service. Usually the customer owns the utilization equipment, such as the lights or appliances in his home or business, or the machinery in industry; and all the utility is expected to do is to furnish the electrical energy or power. It is because street-lighting service may be rendered under so many different conditions that misunderstandings sometimes occur as to what is included in the charge for such service. What are the different conditions which may be included in the term "street-lighting service"?

Type of Street-Lighting Service

The utility may limit its service merely to delivering electrical energy at a particular point. This is the usual concept of electric service for residential, commercial, and industrial users. In some cases, such as Milwaukee and others, the city actually owns and operates the entire street-lighting system and the utility merely delivers kilowatt hours at a particular point. Under these conditions it is quite possible to compare the rate per kilowatt hour with other lighting rates, and as a practical matter, other types of use are often included in the same rate schedule.

Or a utility may deliver energy and also furnish some or all of the operation and maintenance of the street-lighting system. Operation and maintenance might consist of any combination of the following: replacement of lamps, patrolling, painting of posts, replacement and cleaning of globes and lenses, and maintenance of fixtures, wires and cables. A typical case of



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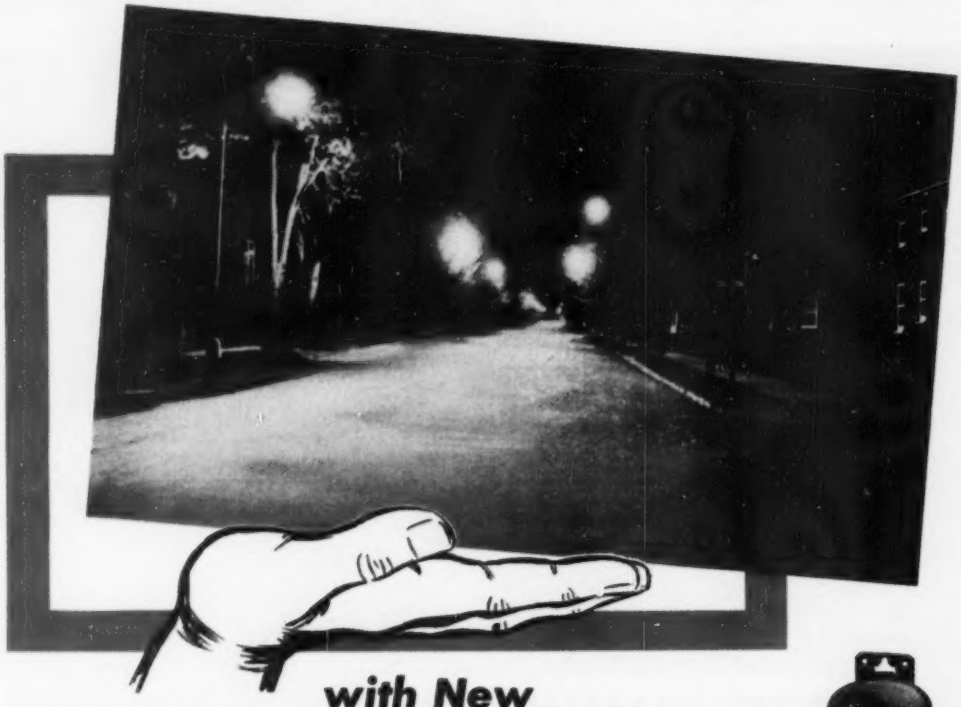

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complete operation and maintenance by a utility department is where the city installs the system initially and the utility takes over from there.

Or a third condition of furnishing street-lighting service is where the utility furnishes electrical energy plus operation and maintenance plus the facilities themselves. This is the common case where the utility itself installs an overhead street-lighting system, bearing the full cost of fixtures, conductors, necessary poles and distribution system, and operates the whole system. This works satisfactorily for the standard overhead type of street-lighting system and is usually the most economical for both parties because the overhead system complements the regular distribution system. The utility is in a position to service the street lights and carry most of the street-lighting circuits and equipment on poles used to carry the general distribution system. But it is apparent that this type of complete service is going to cost more than just supplying kilowatt hours.

Costs of Street-Lighting Service

In general, the costs of rendering street-lighting service can be divided into three parts corresponding roughly to the three basic conditions under which street-lighting service can be furnished: (1) the cost of supplying the electrical energy itself; (2) the cost of servicing and operating the street-lighting system, and (3) the cost of carrying the investment in the street-lighting system, or the cost of ownership. The rates are entirely a matter of recovering the costs incurred under each condition. It then becomes a problem of determining these costs and designing a system of charges in the most practical, convenient, and understandable manner. Under the prescribed system of utility accounts in Wisconsin, many of the costs incident to rendering street-lighting service can be determined directly from the utility's records because there are separate street-lighting accounts, but there are still areas in which cost allocations or estimates must be made where the cost of street-lighting service is part of the general cost of operating the utility system.

Where the utility furnishes electrical energy or power only, the same general principles of cost allocation apply to street-lighting service as to other classes of service. The three broad categories of electrical costs are usually stated as: (a) capacity or demand costs; (b) energy costs, and (c) customer costs. Capacity or demand costs result from providing the generating plant, transmission, and substation capacity to meet the maximum expected load. The methods of allocating responsibilities to the different classes of service are all based on the peculiar nature of the electric-utility business—that the system must be ready to serve instantly almost any demand placed on it, and hence must equal in size the sum of the expected coincident demands. Power cannot be stored and released as needed; the generators must be spinning and ready to deliver at the flick of a switch. Demand costs are thus a function of the size of the load as it contributes to the size of the plant. Fairly stable patterns of use make it possible to measure the contribution each class makes. A load is considered to be "on peak" if it occurs during the period of day and year of the system peak load. Or it is considered "off peak" when it occurs during a period when there is capacity to spare. And there are various gradations in between where a peak load might occur under changing conditions. A typical "on peak" period would be in the late afternoon and early evening during winter months, when industrial, commercial, residential, and street-lighting loads all combine to place a maximum load on the generating facilities of the utility. In the evening, especially in the winter time on shopping nights, residential and commercial lighting and street lighting combine to form another peak. The most typical off-peak period is between midnight and 7 a.m. Street lighting contributes to two peak periods, but it also operates during a good share of the off-peak period. I will not attempt to analyze on a particular cost theory, but generally it can be said that street lighting does contribute to maximum capacity this demand cost as a "rental" of the generating equipment required by this service.

The second main element of electrical cost, usually described as energy cost, is that incurred in the "manufacturing" of kilowatt hours. This is largely an operating cost related to the burning of coal or some other fuel to turn the generators which produce the kilowatt hours. Since these costs are principally fuel costs, the energy charge is sometimes geared to an automatic fuel adjustment clause operating in response to changes in the cost of coal or oil. This cost is fairly uniform for all classes of service, regardless of when used, and depends solely on how many kilowatt hours are used regardless of the rate of use. If electrical energy is the only element of service being furnished, the rate may actually be in two parts—one charge for demand in terms of size of load in kilowatts and one for amount used in kilowatt hours.

Where the utility furnishes electrical energy plus portions of operation and maintenance of the street-lighting system, it makes quite a difference whether the distribution system is overhead as a part of the regular distribution system or underground as a part of a special ornamental system. Where street lighting and other circuits are carried by the same poles, the costs must be allocated, but street lighting must carry its fair share. For instance, tree-trimming problems are sometimes aggravated by the requirements of the high-voltage series street-lighting circuit.

Lights Off at Midnight Saves Little

Worth passing mention also is the cost of controlling the lighting schedule, either with time clocks or photo-electric cells. By way of illustration, take the special case of "midnight lights"—a condition fairly common in ornamental or downtown systems where alternate lights burn only till midnight. What are the cost savings involved? Of course, there is some energy saved, but it is all "off peak" with no resultant saving in demand or capacity costs. The lamps will last longer, but not twice as long, because burning life depends partly on the number of starts as well as on total time burned. Other costs of maintenance, cleaning, etc., are unchanged because these items do not depend on whether the lights are on or off. Are there any added costs? Yes—the midnight schedule requires a separate control circuit. Unless a large number of lights is involved, chances are there is no net saving from a midnight schedule. This is just by way of illustrating a situation where misunderstandings might occur if the background were not fully explained or understood. It isn't simply a case of half price because the lights only burn half the time.

Then there is the problem of operating and maintaining the lamps and fixtures themselves. Included in this category of costs are lamp and glassware replacement, washing, and patrolling. This is pretty directly a matter of labor and material costs, and in these days, the older rate schedules are pretty badly deficient on this item. Here it makes quite a difference whether the system consists of incandescent lights which cost in the neighborhood of $1, or mercury-vapor lamps which cost $10-$15. Also, the cost can quite obviously be affected by how often the lamps are scheduled to be cleaned.

It might be well to mention more about mercury-vapor lights, since this is the most recent development of general acceptance in the field. As mentioned, the lamps themselves are more expensive and there is a certain amount of auxiliary equipment comparable to the starters or ballasts in fluorescent

new "cost controls" for your street lighting program! ...with

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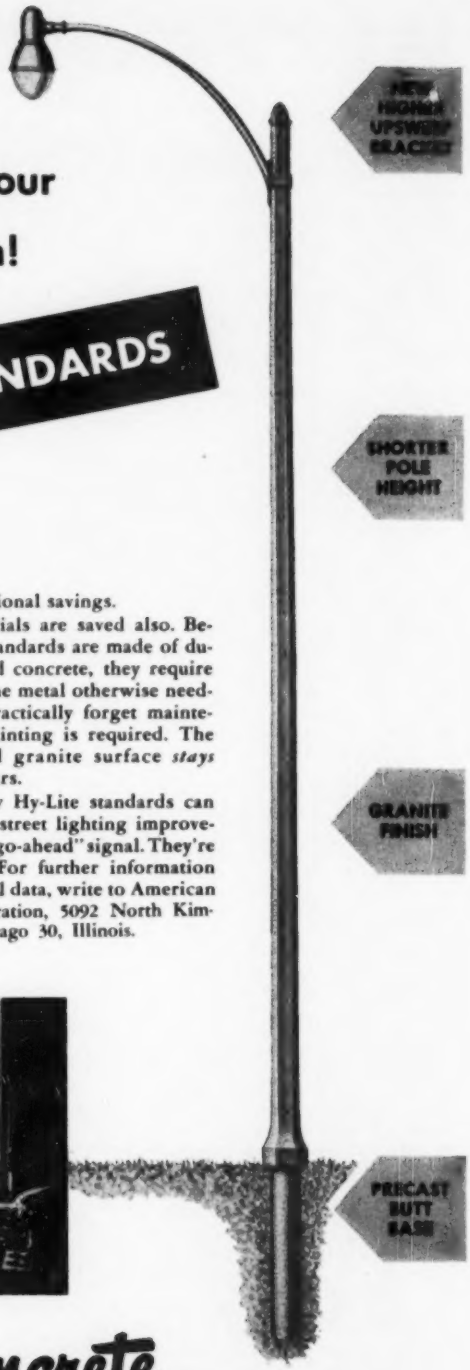

WHERE materials and cost problems are involved, many communities are finding the answers to street lighting improvement problems with these attractive, durable Hy-Lite standards.

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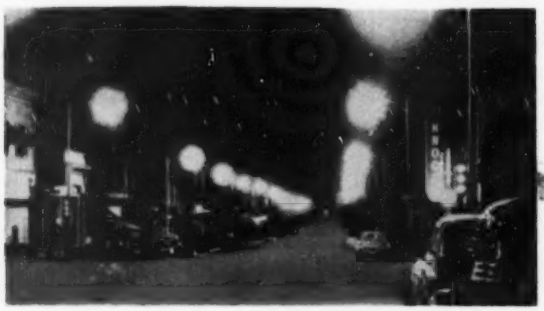

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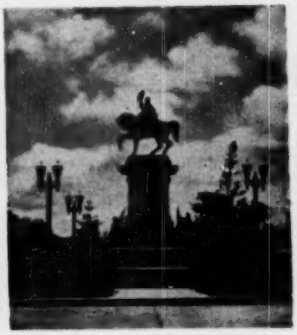

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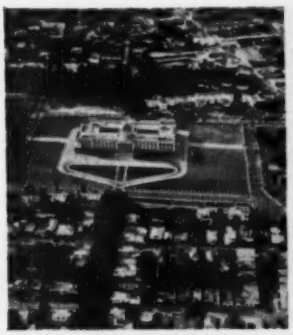

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lamps, but the lights themselves are much more efficient—that is, they give more light for a given amount of electricity consumed. Also, fewer lamps can produce the desired level of illumination at a lower over-all cost under these conditions. These lights are beyond the experimental stage, and as more cost experience is obtained, rates for this service will become standardized.

Where Utility Furnishes All

The third general condition under which street-lighting service may be furnished is where the utility furnishes the energy plus operation and maintenance plus the facilities themselves. There are two distinct approaches to this complete service condition. Lighting engineers stress the idea of the amount of light required in units of foot-candles or lumens for good street-lighting service, but from an operating and rate standpoint the matter of costs is still related to physical units in terms of lamps and poles, and electrical size in terms of watts and kilowatt-hours. A number of cost factors must be considered in designing a particular rate.

In a typical overhead system, there is the question of how much should be spent on the fixtures in the first place. There is also a question of the type of mounting—whether suspension, mast-arm, or brackets. There is the factor of spacing and size of the lights. The size of the individual lights has a bearing on spacing, and the mounting heights desired may have an effect on pole sizes and tree-trimming.

For an ornamental system the major problem is the high initial cost. There is the question of whether to meet it head-on at the beginning or to bury it in a continuing charge for service over the life of the equipment. There is a natural hesitancy to include it as an element of the service charge because it makes the rate appear too high. Once the system is installed, the high initial cost may be lost sight of. Since the type of lights and poles on an ornamental system has a direct bearing on the value of the adjacent property, the affected property owners often contribute to the initial cost. In general the trend in ornamental systems is for the municipality or property owners to finance the initial costs and limit the utility's obligation and charge to the furnishing of electrical energy and possibly cleaning, patrolling, and replacing lamps and glassware.

Forms of Rates

For electrical energy only, the rate may be a charge per kilowatt hour, either metered or calculated; it might be a straight rate per kilowatt hour or a block-type rate. Or it can be a "per lamp" charge according to size. It is possible to work it either way because all the conditions in street-lighting service are known and controllable and the average rate can be determined in advance; or a block rate can operate to give the desired average rate result under changing conditions and allow for taking other service under the same schedule.

In addition to the options for energy only, operation and maintenance costs can be covered by a fixed charge per lamp; or a per-lamp charge can be combined with a charge per span foot of street-lighting circuit, or a flat service charge for an entire system; or a lump sum may cover energy and maintenance charges tailored for a particular system without a detailed schedule of the rate per lamp.

Where the complete street-lighting service is furnished, you may have a combination of the various energy charges and operation and maintenance charges mentioned above plus some method of charging for the investment in facilities. This investment "carrying" charge, the cost of ownership, is related directly to the initial cost of the equipment, consisting of such fixed costs as depreciation, taxes, and the cost of money. This charge is usually expressed as a fixed charge per lamp depending on the size or as a fixed percentage on the total cost of the system as it appears on the books of the utility.

There are any number of combinations of rate schedules possible, and a review of the existing published rates in Wisconsin indicates that just about all the possibilities have been used. The trend or development has been from a detailed list of charges to a single over-all rate per lamp depending on size, or a fixed charge per lamp plus an energy charge. The three most common types of charges in Wisconsin at present for complete street-lighting service are (1) fixed investment charge per lamp, plus a service charge per lamp or per foot or span length, plus an energy charge; (2) fixed charge per lamp covering investment plus service, plus an energy charge; or (3) flat charge per lamp covering all costs depending on size of lamp and type of service, whether overhead or ornamental.

There is the general problem of whether to make the charges uniform by months, or to have them vary with the burning schedule—higher in winter, lower in summer. Since most of the costs are independent of the burning schedule, there is a tendency to make the charge for complete service uniform throughout the year. However, where electrical energy only is being supplied, the charge usually varies with use.

The matter of contracts is mainly of concern where a private utility is furnishing the public street-lighting service, although it would seem desirable even where a municipal utility or electric department is furnishing the service to have a written memorandum of all the conditions. The main purpose of the contract or memorandum is to spell out the specific conditions under which street-lighting service is to be furnished, because it is evident that there can be a wide difference in meaning in the use of the term "street-lighting service." It is particularly important to specify which party is to furnish the various elements of the equipment. Where the city furnishes the ornamental system, underground cable, etc., it is important to define the responsibilities of maintenance and operation——there can be misunderstandings as to what is maintenance and what is replacement or renewal unless the problem is met at the outset.

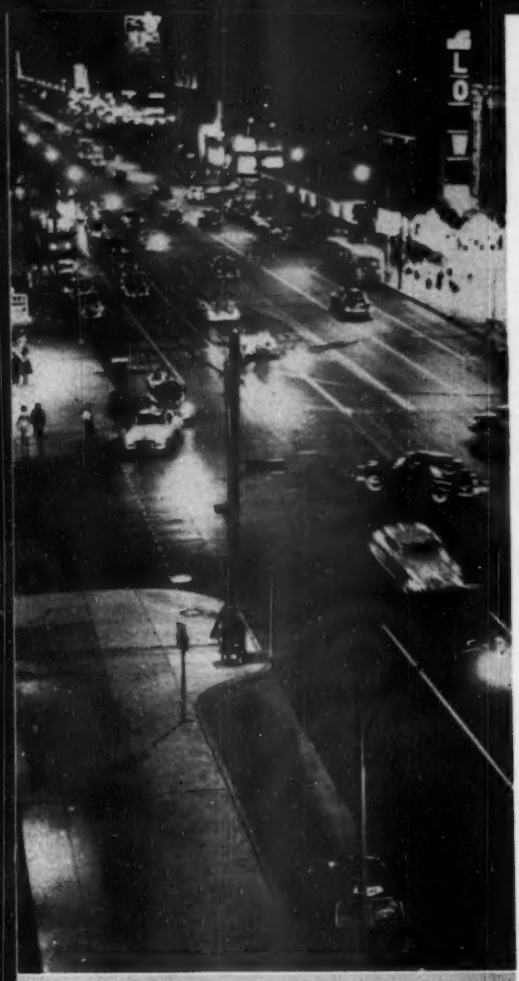
The Street-Lighting Contract

Usually the basic agreement to furnish street-lighting service is for a 10-year period with automatic renewal from year to year. Also, there should be some provision for automatic extension of the term of contract if the utility is required to add substantially to its investment in street-lighting equipment during the base term. Some contracts have such automatic extension provisions, whereas others limit the obligation to add new lights or facilities unless a new contract term is negotiated. The contract should also specify the utility's obligation to add new lights; in other words, a statement of the street-lighting-extension policy, and this is usually also a part of the utility's filed rules.

The actual rate scheduled is also a part of the contract, often as an exhibit indicating the current rate at the time of contract, subject to revision by proper Public Service Commission action.

The subject of street-lighting rates is just another specialized problem in pricing. In the utility business, the price must bear a close relationship to costs. From the city's standpoint, the total price of the service must represent value received. It is well recognized that in the last few years, rising costs of all kinds have put upward pressures on all prices. But also in recent years it is evident that cities have recognized the increasing value of adequate street-lighting service and have considered the cost in terms of a good investment in civic improvement.

EDITOR'S NOTE: This important paper was delivered by John F. Conrad, who had aided in its preparation, before the 1951 conference of the League of Wisconsin Municipalities at Milwaukee.



Downtown Dayton at night, relighted with Monotube poles.

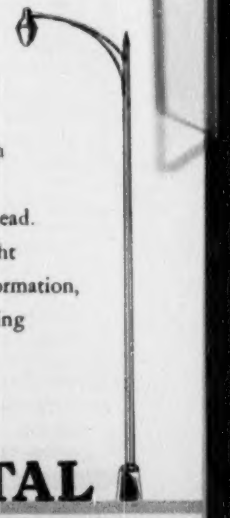
Suburban Dayton, showing graceful Monotube poles by day.

Good light years ahead

for Dayton, Ohio

DAY or night, Dayton, Ohio, *appears* better and *sees* better—with its new, modernized street lighting. Monotube poles are on the job to give years of efficient, economical service.

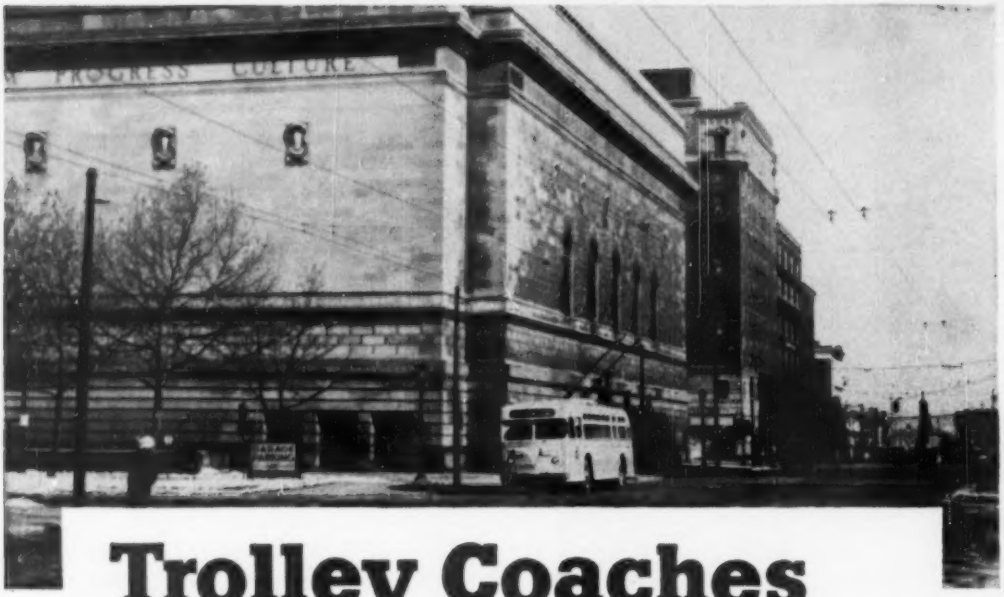
Dayton chose Monotubes because of their *extra* advantages. Monotubes are designed for the most modern safety street lighting practices. They're cold-rolled—have extra strength for a lifetime of service. They have one-piece shaft construction providing clean-lined beauty which blends with any surroundings. They're easy to install. Bare minimum of maintenance is needed.



Street lighting modernization with Monotube poles is the wise and economical choice—for the years ahead. Standard ranges in size, gauge, height for *any* condition. For complete information, write The Union Metal Manufacturing Company, Canton 5, Ohio.

UNION METAL

Monotube Street Lighting Poles



Trolley Coaches

Fit the Pattern For "Rapid Transit" in Cleveland

● When most Clevelanders speak of "rapid transit", they're referring to an electrified, off-street transit line that will whisk large numbers of riders into the downtown area.

But the management of Cleveland Transit System well knows that "rapid transit" includes more than the one main line now under construction. It's a whole system of mass transportation. For how will people get to the main-line stations? How will thousands of others travel who live too far from the main line to use it? Obviously, a network of fast-moving lines is needed for the system to be "rapid."

Here's where the trolley coach fits the Cleveland pattern. It will be used on feeder and crosstown lines, on lines parallel to the main line . . . working with the big CTS motor bus fleet to bring the benefits of "rapid transit" to the entire city.

The trolley coach gets a major job for several reasons. One is the simple fact that riders like trolley coaches. Another, their speed and dependability mean much in heavy Cleveland traffic. You won't find one coach waiting on another because its motor is in poor condition and it has fallen behind schedule. Electric motors stay in good condition and trolley coaches stay on schedule. They also give a good financial performance, currently earn $120,000 a month for CTS.

The expanding CTS trolley coach fleet now numbers 411 vehicles, will eventually total 550 or more. When the main line opens in late 1953, the fleet will be ready for its vital part in "rapid transit."

Ohio Brass

MANSFIELD OHIO, U. S. A.

Canadian Ohio Brass Co., Ltd., Niagara Falls, Ont.

The City Tells Its Story

Edited by HENRY DAVIS NADIG
Executive Director, Government Public Relations Association

Local community services capable of great development

SCOPE for enterprise in local government was the subject of the cover (here reproduced) and of the lead editorial in the December 1951 issue of *Local Government Service;* also of a special report recently issued by the (British) National Association of Local Government Officers.* The report indicates the similarity in many respects of local-government problems in Britain and in the United States, and that municipal officials in various parts of the world have much to learn from each other.

It was through a research panel set up last year by NALGO, in association with Manchester University, that this special report was developed. The task of the panel, the report explains, was to inquire "how far the effectiveness of government in this country still depends on the initiative and enterprise of local authorities, and how far such enterprise is still possible without drastic changes in the structure and finance of local government."

The report gives an emphatic answer to both questions: to the first that, notwithstanding the transfer of many functions to national authorities, "it is still true that most of the public services on which the citizen relies in his daily life are provided by local government, and in every part of its work a spirit of enterprise is vital to efficiency"; to the second, that "the field for initiative is open."

Some examples of "community services" which the report considers to be capable of great development include:

Entertainment and Culture

Provision of parks, playing fields, swimming baths, golf courses, athletics stadia, and cycle tracks

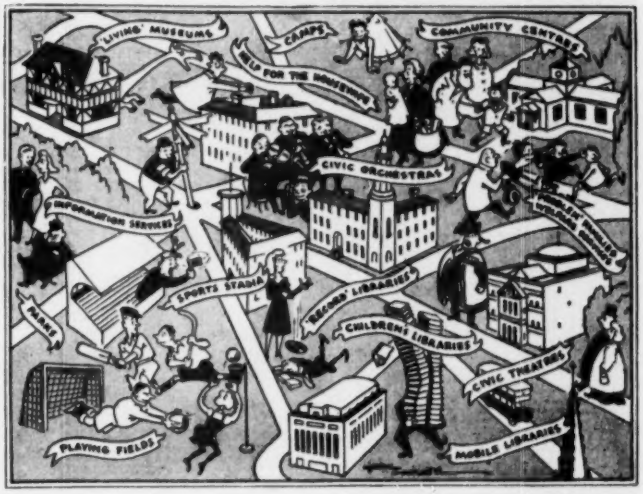
Encouraging recreation and cultural and physical training, by establishing camps, holiday classes, play centres, and community centres, and by organizing games, expeditions, and similar activities

Development of the library service by the provision of information services, exhibitions, mobile and children's libraries, and libraries of gramophone records and sheet music

Improvement of museums and, in particular, the development of the "living" museum and preservation of historic houses

Preservation of records and recording of archives in the interests of local history

Provision of civic theatres and orchestras, and of entertainment halls



Welfare

Welfare of mothers and of children not yet attending school—and in particular better co-ordination between the existing local-government services and the hospital and general-practitioner services

Prevention of disease and care and after-care of sick persons not in hospitals

Development of domiciliary mental health and "home help" services

Care of the "problem family" to prevent it sinking into "hopeless dependence on uncoordinated charity"

Education of children handicapped by poverty, family circumstances, physical defect, or mental abnormality

Provision for the "deprived" child, not only by arranging adoption and "fostering," but by experimenting in different types of homes and establishing "reception centres" where the individual needs of each child may be assessed

Facilities for part-time occupational therapy and recreation for the physically handicapped

Help for old people—including temporary or permanent accommodation, provision of special bungalows or flats, "meals on wheels," night-watchers, help with shopping, and holidays.

While, as has been shown, the report sees a wide field still open to enterprise in local government, it does not overlook the many difficulties standing in the way today. Among these outstanding difficulties are:

- The national economic situation and the financial limitations within which local authorities must work;
- The great variations in size between local authorities, and the corresponding variations in resources;
- The increasing degree of central control—"probably greater than can be justified"—over local authorities resulting from the system of allocating government grants, and
- The inelasticity of the rating (taxation) system, which imposes a serious check on enterprise.

In discussing new fields for initiative,

* *Local Government Service* is the official journal of the NALGO. The journal and the report are both available from the Association, at 1, York Gate, Regent's Park, London, N.W.1.

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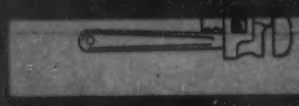

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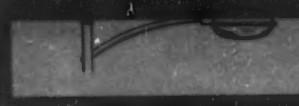

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THE WELSBACH CORPORATION
ENGINEERS AND CONSTRUCTORS

despite some of the difficulties outlined above, the report points out that all local authorities, down to the smallest rural council, can exercise great influence in focusing and representing local opinion.

Their members, [the report points out] may speak for their electors on all matters of local concern; the council can be the main forum of local discussion on public issues, and if it speaks with vigor, with moderation, and with general public support, its voice will be influential even on matters over which it has no legal control.

An elected councillor is, like a Member of Parliament, a representative of the people; a council can always take the initiative with some effect if it has its own public opinion behind it and if its proposals do not fly in the face of the facts of the situation.

The field for initiative is open [the report concludes] not only in the technical development of services, but in the development of the system of administration. . . . Most important of all is collaboration between local authorities. . . . This cannot be developed from above or from outside local government itself. The new pattern of administration is likely to emerge from local experiment. . . . Local government does its best work in an atmosphere of free discussion, of competition, even of rivalry. The maintenance of this atmosphere is one condition of the maintenance of enterprise in local government.

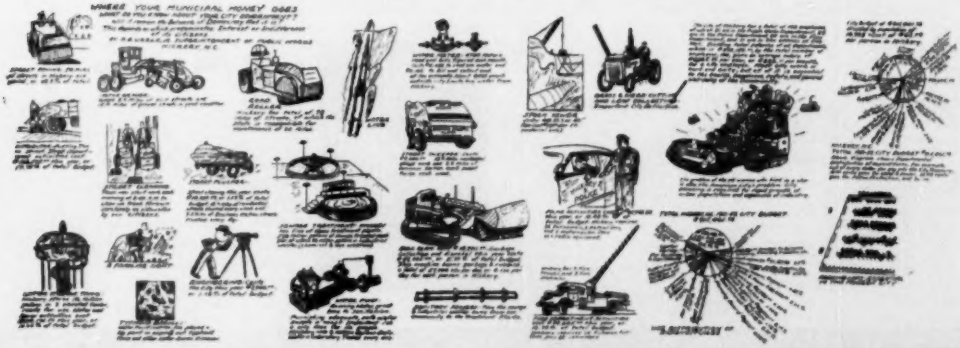
City Map and Directory for Oshkosh, Wis.

HOW a city can make good use of a combined map and directory is well illustrated by Oshkosh, Wis. The City Planning Commission prepared an attractive folder, with a detailed map on one side, and facts and descriptions about Oshkosh, its institutions, and services on the other side.

Vernon D. Irish, Director, City Planning Commission, reports that distribution has already gone past the 20,000 mark. He writes as follows:

All banks have copies with special imprints which they hand out to their patrons. It is distributed at all conventions in the city. Gas stations at the edge of the city give them to tourists who ask questions. They are available at the Public Library. The State Hospital sends them to applicants for the nursing course. The Chamber of Commerce mails them to persons who write in. The League of American Wheelmen and the Hostelers Association have both written to Mayor Ernest R. Siewert thanking him for distributing it. The folder has certainly helped both the Planning Commission and the city's public-relations program.

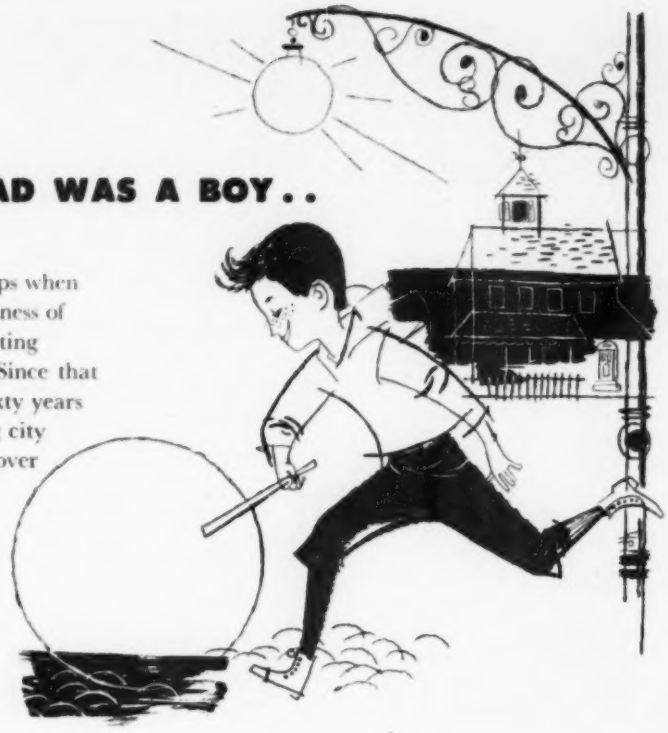
Hand-Drawn Sketches Liven Municipal Reporting

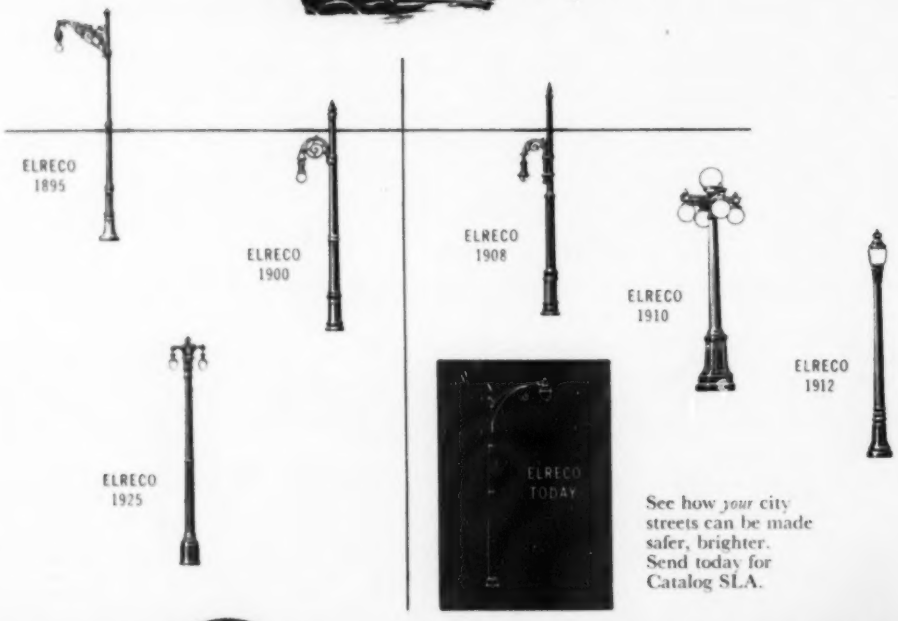


A. B. Uzzle, Jr., Superintendent of Public Works, at Hickory, N. C., got busy with his pen recently to draw the sketches reproduced here. They were widely distributed, in enlarged form, to let the citizens of Hickory know where their municipal money goes, what various items of municipal equipment cost, and what the charges are for certain municipal services. Superintendent Uzzle reported the response of the citizens to the illustrations excellent.

SINCE GRANDAD WAS A BOY . .

Grandad was rolling hoops when Elreco went into the business of manufacturing street-lighting standards and brackets. Since that day we have rolled up sixty years of experience . . . making city streets brighter, safer all over the world.





See how *your* city streets can be made safer, brighter. Send today for Catalog SLA.

THE ELRECO CORPORATION

2900 CORMANY AVE. CINCINNATI 25, OHIO

Powhatan, Ohio, Selects an Imhoff Tank

The need for simple operation, and low initial cost for a community of 2,400, dictated the Imhoff design

By CARL J. SIMON
Consulting Engineer
Van Wert, Ohio

IF ANYONE infers that the Imhoff tank has become obsolete, he is wrong, in our opinion. If you have a small community, and must have simple operation and can spend only a a limited amount for construction, you use the Imhoff tank, and furthermore, you get good purification results.

The Village of Powhatan, located on the Ohio River, fits this description. The village was without sewerage of any type except for septic-tank installations, and in this ground, it did not prove to be altogether satisfactory. So we were commissioned to design the sewer system and the treatment facilities. The sewers amounted to 48,000 feet, total length. The mains varied from 8 to 12 inches. The service laterals were all 6 inches, built to the property lines. The pipe is all vitrified clay; the 170 manholes are of reinforced-concrete pipe sections with cast-iron rings and covers. Two pump houses serving the lower parts of town are connected to the gravity portion with 4-inch and 6-inch James B. Clow mechanical-joint cast-iron pipe.

Only Primary Treatment

The treament plant provides primary treament only, and consists of three structures. The first is a pump and control building with a 14-by-7-foot wet well. The wet well has a hand-raked bar screen, and a space for a comminutor if this should be supplied in the future. The dry well measures 12 feet by 10 feet, is under cover, and has two Aurora centrifugal pumps; one rated at 125 gpm, and a second at 250 gpm. At ground-level are office and control room, a laboratory, and a tool room designed so that it can be changed to a chlorination room if that proves desirable.

Imhoff Tank Dimensions

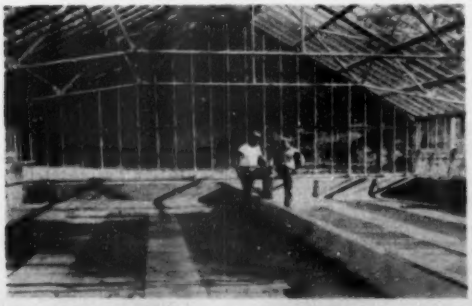
For primary treatment, we selected the Imhoff tank because of its low first cost and simplicity of operation. It measures 20 feet by 40 feet inside dimensions, and has dual-flow compartments and channels for reversing the flow if desired. Its total depth is 28 feet, of which 10 feet is above ground. It provides 2½ hours' detention for primary settling. The sludge-digestion compartment was designed on the basis of 4 cubic feet per capita. Sludge is withdrawn by gravity to a sludge bed measuring 40 feet by 56 feet. The bed is covered by an American Moninger greenhouse.

The design of the plant was on a basis of an ultimate population of 2,400 and a flow of 90 gallons per capita per day. We estimate that the peak flow will be 2½ times the average. The load will be almost entirely domestic unless the town changes character. Sewage is metered in the control building. A 6-inch Builders Providence venturi tube, placed in the line following the pumps, indicates, records, and totalizes the flow.

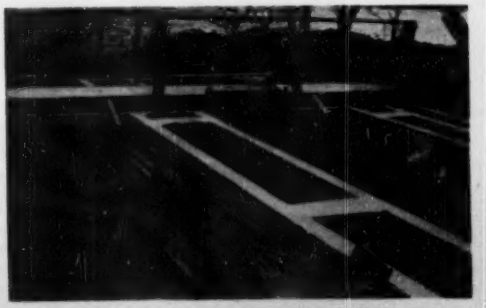
PHOTOS COURTESY WHEELING (W. VA.) POST INTELLIGENCER

At the point pictured, the plant operator is able to keep an eye on the record of the flow entering Powhatan's new sewage-treatment plant.

The plant is designed to be completely automatic with part-time supervision and care. Sewers were badly needed by the town. The present treatment allows the town's liquid-borne wastes to comply with the requirements of the Ohio Department of Health and of the Ohio River Compact.



This greenhouse reduces the area needed for the sludge-drying bed and insures good year-round drying operation.



The Imhoff tank, often superseded, has shown the best dollar-for-dollar purification value in Powhatan, Ohio.

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The Reed-Cleco Valve, found only in Cleco Paving Breakers, gives full control of both power and return strokes, reducing recoil.

Cleco Paving Breakers hit hard and fast. They produce more work per man per hour and cost less to maintain than any other demolition tools in their class.

Write for Bulletin RC-949

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DISTRIBUTORS IN PRINCIPAL CITIES OF THE UNITED STATES AND THROUGHOUT THE WORLD

Cities Find Community Forests Valuable

SURROUNDING the town of Newington, N. H., is a forest which the town itself owns. Since 1710, this local woodland has played an important part in the life of the community.

Although it comprises only 110 acres, from it have come materials to help build the village church, parsonage, town hall, school, and library. In late years, it has furnished planks and timbers for bridges and similar improvements, and in some years has supplied as much as thirty cords of wood to heat public buildings during the winter. Besides its financial advantage, the Newington forest furnishes the townspeople with a park for picnics and holiday outings.

Other Community Forests

Many towns, counties, boroughs, and cities in other sections of the United States also own forest lands that have been set aside for definite purposes.

In New England the local public forests, such as that at Newington, are known as town forests. Locally in other regions they may be known as town, village, municipal, city, county, city watershed, school, hospital, church, or memorial forests.

Few community forests were established outside of New England before 1900. The idea had taken root, however, and by 1910, through the efforts of various forestry men, it had been well advertised. Before 1920, 19 state laws were passed providing for their establishment.

Incomplete reports now show approximately 1,500 community forests in the United States. These properties include an estimated 3,000,000 acres of land. More than 146,000,000 trees have been planted on this publicly owned land.

Community forests have in many cases emerged from a desire to protect a watershed which supplies water for domestic use. Another reason for these projects in other towns has been the lack of natural recreational facilities. Where the main body of the timber is unfrequented by the townspeople, it may be used for large yields of lumber. The more scenic and accessible areas provide excellent recreational facilities.

Vary in Size

Community forests vary greatly in size. The highly successful municipal watershed forest of Kingsport, Tenn., is 1,200 acres; Waynesville, N. C., has an 8,200-acre forest, and Seattle, Wash., has one of 66,380 acres.

As reported by the Tennessee Municipal League's Technical Advisory Service, timber cutting on Kingsport's watershed yielded a net of $34,000 for the city treasury in 1948 and 1949, and provided more than 2,250,000 board feet of lumber for local industry. Waynesville's forest is operating under a 13-year plan (1946-1958) developed by the Tennessee Valley Authority and the North Carolina State Division of Forestry. Its first two sales of timber, in 1948 and 1949, netted Waynesville almost $50,000, but the water supply was not endangered. The city now employs a forester to supervise its forestry lands, to reforest open land, and also to help protect the area from fire.

Waynesville's plan for its watershed provides that water is not taken from sale areas while cutting is in progress or for one year thereafter. In addition, to protect the water supply, all roads are located on ridges away from streams, with drainage planned to prevent concentrations of water. Back slopes are made almost vertical to reduce exposed areas, with culverts used to handle water in all natural drainages. Log skidding is arranged to prevent the creation of new water channels.

Selective Harvesting

In both Kingsport and Waynesville, mature and defective timber is the only timber harvested. Consideration is given to scenic values and recreational development in cutting. Timber is sold on the stump to the person who offers the highest lump-sum payment for all marked trees, the transaction being covered by a written contract.

The Kingsport contract provides that the purchaser must cut only marked trees, protect the unmarked trees from damage from logging operations, pay specified penalties for cutting unmarked trees, cut and remove the marked timber in a specified period of time, and file a bond guaranteeing contract performance.

Forest Is Stabilizing Factor In Community

The community forest, when firmly established and operating on a continuously cropping basis, may contribute its share of material to maintain local industries. It will thus not only aid local employment but will also contribute toward stabilized prosperity and group welfare. Some community forests have yielded Christmas trees and even ornamental trees for planting in parks and along streets and highways.

The expense to the community of providing work in the forest may become self-liquidating through increased returns from the forest at some future date.

Many states now have authorized various political subdivisions to purchase lands, receive gifts of funds or lands, and manage forest areas. Free trees have been made available from state nurseries in some parts of the country, and advice and assistance on tree planting and cutting problems can usually be obtained from the state forester.

Subsidies to Industries a Dubious Procedure

COMPETITION among municipalities for new industries is leading in many instances to uneconomic or illegal subsidies which may prove very detrimental to our local and state governments. This warning was sounded by Harry W. Wolkstein, tax practitioner and certified public accountant, of Newark, N. J., at the recent annual conference of the National Tax Association.

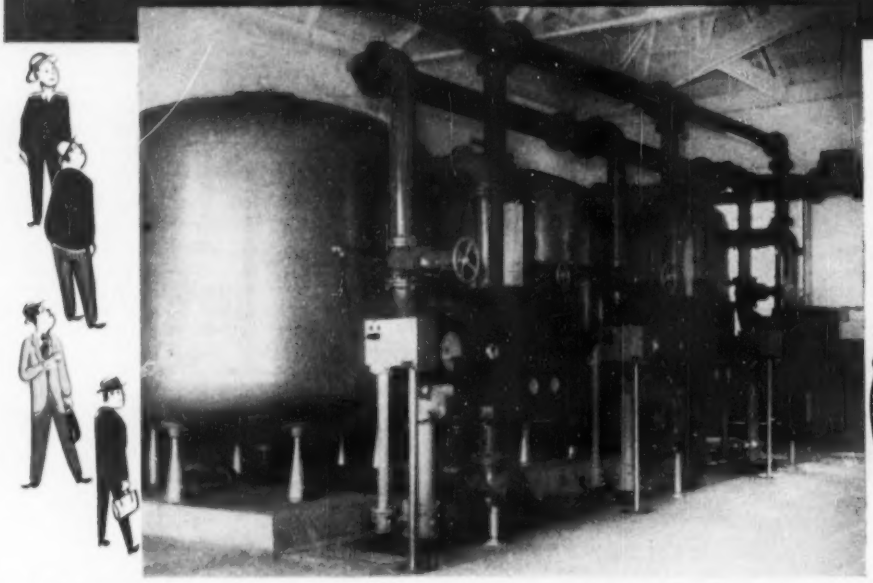
When a municipal government, through an industrial development foundation, provides a new industry with a plant at a nominal rental or extends a loan to it that a commercial bank will not consider, then that local government becomes a partner in that business or industry; and a future period of depression may result in costly financial losses to the community rather than an industrial gain.

An industry should seek that locality in which the tax administration is equitable, uniform, and efficient rather than seek the questionable privileges of tax exemptions or concessions, which privileges are unjust unto their competitors who must pay all their tax bills. Industry should seek that locality in which the local and county governments are financially sound and abide with the basic tax principles of equity, universality, and uniformity.

Study to Be Published by Tax Association

The above conclusions are based upon a recent research study by Mr. Wolkstein, the detailed results of which will be published in the forthcoming 1951 Proceedings of the National Tax Association, Box 1799, at Sacramento 8, Calif.

Where the EYES are this month!



The EYES this month are on the New Bern, North Carolina, installation because Refinite understands it is the largest municipal pressure zeolite softening plant in North Carolina.

PLANT INFORMATION & FACTS

Cost of Plant and Improvement, $100,000.00 . . . Estimate Cost of Operation Per Year, $28,129.00 . . . Estimated Saving Per Year Per Family, $125.00 in Soaps, Linens and Plumbing . . . Financed with 80% Increase in Water Bill for 30 Months' Period . . . 80% Increase in Water Bills Will Be Removed on March 31, 1952 . . . Will Reduce Hardness from 17 Parts Per Million to Four Parts Per Million . . . Will Remove Iron from Water . . . Will Remove All Odors from Water . . . This Gives Ideal Domestic Water . . . Equipment Installed by George A. Rock, Raleigh, North Carolina.

Refinite's new hardness tester—the "Hydromizer"—takes water samples periodically and tests them for hardness. As soon as the water fails to test soft, an alarm rings to notify the operator that the softeners need regeneraion. Regeneration is accomplished manually, but it can be converted to automatic operation—controlled by the "Hydromizer"—any time in the future . . . There are three 108 inch by 66 inch Softeners. Each of which has a flow rate of 440 gpm. Total capacity is over 12,000,000 grains exchange . . . Hard water is by-passed around the softening plant to produce a blended water in the city mains. Because the raw water contains iron and other objectionable characteristics, the by-pass water is aerated and filtered through a degasifier and two 9' x 22' horizontal sand filters. Each filter has a capacity of 330 gpm . . . More facts will be mailed to you on request.

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. . . and Refinite wants to serve you, too! Regardless of your water treatment problem . . . iron, turbidity, hardness, bad taste or odor . . . you will find that Refinite has the Right Answer. Today, write or phone for new special bulletins that will answer many of your water conditioning questions and show how Refinite's Engineers can help you. No obligation. **ADDRESS: REFINITE CORPORATION, DEPT. AC, P.O. BOX 1312, OMAHA, NEBR.**

P.S. Refinite also manufactures low cost, efficient units to soften water for individual homes. See your local dealer, or write for literature.

A Realistic Approach to Housing for the Aged

To the Editor of THE AMERICAN CITY:

The Division of Housing of the State of New York is in hearty accord with the point of view suggested in the December issue of THE AMERICAN CITY (page 7), where you question the wisdom of segregating large numbers of aged persons in one-bedroom houses without any young life with which to associate.

In fact, recognizing the need for a realistic approach to the provision of adequate housing for elderly couples and aged single persons of low income, we have adopted a regulation under which in all future state-aided public housing projects it will be required that approximately 5% of the dwelling units be set aside for the aging and that, upon application from the local authorities, this may be increased as the need therefor is shown. Facilities in these apartments will be particularly designed to serve the special needs of the elderly. To reduce the possibility of accidents, for example, bathrooms will have non-slip floors; square bathtubs with seats and hand grips in the walls will be provided to facilitate getting in and out of the tubs; in some cases showers, with seats and hand grips will be provided for aged couples who feel insecure in getting into and out of bathtubs; thresholds will be eliminated to lessen the danger of tripping; electric instead of gas stoves will be provided to prevent asphyxiation from smothering of the flame by the boiling over of liquids. To simplify housekeeping, shelves and cabinets will be placed at low, easy-to-reach levels and windows will have "mechanical operators" for easy and safe opening and closing of casements. Apartments will face the sunny side and more heat will be provided in these apartments than in those for younger people.

The apartments for the aging may be located together in separate wings in order to encourage mutual help and to reduce the noises from children, although some may be provided in sheltered areas on the ground floor for the feeble aged. Where feasible—that is, where the projects are very large so that there will be a considerable number of apartments for the elderly—there will be special visiting and modified recreational rooms for them in addition to the community facilities provided in state-aided projects for tenants and residents of the neighborhood.

In Sweden there are separate projects entirely reserved for the aged, but we regard this as isolation, and undesirable because it does not give them an opportunity to mingle with younger people, particularly children, and removes them from the stream of everyday life, leaving them little to discuss except their own problems.* Our plan of having their apartments in the same building with the other tenants, but protected in a separate wing, will give them all the advantages of community living without the disadvantages.

While the State Division of Housing has pioneered in the provision of accommodations for the aged, apartments for elderly people having first been included in the state-aided Fort Greene Houses in Brooklyn, N. Y., in 1942, the number has necessarily been insufficient and the coordinated special facilities have not heretofore been provided. Even under the expanded program, the situation will not be fully taken care of and cannot be until private enterprise recognizes that it, too, has a duty to help provide smaller apartments at reasonable rents for the elderly so as not to force the burden completely on governmental agencies.

HERMAN T. STICHMAN
Commissioner of Housing
State of New York

*EDITOR'S NOTE: The Swedish policy Commissioner Stichman refers to is being revised. In the report, "Cooperative Housing in Europe," issued by the U. S. Senate Banking and Currency Subcommittee in 1950, is the following statement: "Abandoning its former policy of building special projects for large families or very poor people, Sweden has during the past two years adopted the policy of having all kinds of families live in a neighborhood—large and small, old and young, poor and comfortably off. Municipalities now build housing developments in which any family can live, and the state pays rent subsidies to low-income families living in approved modern state-aided dwellings. Only a certain proportion of the families in a development are permitted to be of such low-income level as to be eligible for these subsidies."

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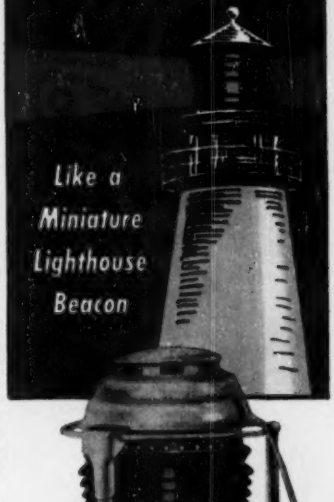

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Five Good Principles Of Urban Design and Housing

PHILADELPHIA'S principles of urban design and housing have been commended highly by the Committee on Urban Design and Housing of the American Institute of Architects, serving at the invitation of the chairmen of the Planning Commission, Redevelopment Authority, and Housing Authority.*

The following five points were among those which the Committee considered especially significant and of interest to other cities:

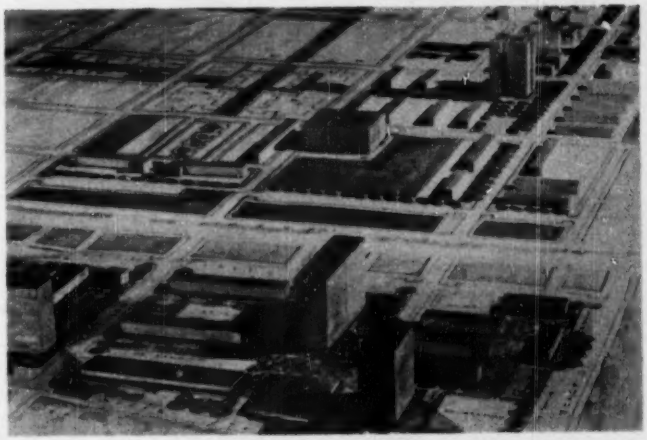
● 1. Planning and conception are on a large scale, but design and execution are on a community and sub-community basis. This permits and encourages local understanding and architectural variation with over-all unity. It also makes it possible for the small developer to participate on a cumulatively important and increasing scale, as contrasted with the more usual reliance on a relatively few big aggregations of capital such as insurance companies.

The successful combination is in no small measure due to the use of a consulting and coordinating architect on each over-all development to tie the elements together. . . .

● 2. Enlisting the creative participation of citizen groups and local organizations right at the start of thinking and work in a neighborhood is not only an effort to realize grass-roots democracy, but enhances neighborliness and neighborhood morale and helps assure suitability and realism in the planning.

It is important to note that the group is brought in right at the start, to help diagnose as well as to help solve. This process is much more fruitful than the "open hearing" usually required and which is too often the only contact between officialdom and citizenry. The open hearing is valuable, but it is only a last-minute device and a rather negative one, coming only after plans have been made and proposals made final, so that officials are reluctant to consider changes, and certainly basic changes.

3. Large-scale thinking and planning, in smaller-scale neighborhood and sub-neighborhood units, has a number of advantages.



A scale-model plan for coordination of six private and public housing projects through an over-all plan in the Philadelphia Southwest Temple area.

The theory of very large single projects has been, especially in slum or blighted areas, that they create their own community and healthy atmosphere. But experience indicates serious defects. Usually a huge uniform-income unit is created which is unnatural and unhealthy, and the community has tended to become too much of an island unto itself. It has little rooting or branching or relation with its surroundings. . . .

The frequent displacement of almost all the original-site inhabitants produces tensions and insecurities, even when physical living quarters are found elsewhere. The Philadelphia method of smaller individual projects permits retention of still useful homes and small areas, and seems to promise less of such tensions, and more of a sense of continuity of life and living. . . .

● 4. By leaving still useful buildings in place, not as monuments to nuisance value but creatively taking them into account in the new pattern and design, there is promise of creating or retaining a sense of depth in time, of continuity with the past, together with the bold new future. This is not antiquarianism, but complete conception of a city's life and continuity. . . .

● 5. Philadelphia's method is compatible with very large planning and conception. We have nowhere seen bigger and bolder single projects than the new Triangle proposal, or the development of malls and large-scale underground parking to connect with the new throughways and make them really effective. Philadelphia also gives strong promise that these projects will unite, connect, and reinforce each other's purpose and usefulness. We have the feeling that equally large projects elsewhere are conceived more as individual things by themselves.

Areas for Further Study

Reporting that they were deeply impressed and enthusiastic after what they had seen, members of the group, headed by Albert Mayer, suggested several areas for further research and study, including:

Comparative studies on the economics and social effects of the very large new project as compared with more moderate-sized individual-unit enterprises;

Whether too much of a rigorous equi-traffic street pattern is being retained in some of the redevelopment areas, rather than channeling traffic on to fewer wider streets and effectuating the super-block concept;

Research on sociological concepts or premises in redevelopment, including effectiveness of local group contacts; tall elevator apartments as compared with low close-to-the-ground buildings, and

Importance of early vacant-land development to provide adequate homes for displaced people, and more linkage between redevelopment and peripheral or outlying-area planning.

* Members of the American Institute of Architects' Urban Design and Housing Committee who attended the meeting are: Albert Mayer, chairman; William W. Wurster, vice-chairman; Robert E. Alexander; Forest W. Coile; George Bain Cummings; Fred Lewis Markham; Henry J. Toombs; G. Holmes Perkins; William F. R. Ballard, and Henry S. Churchill. Copies of the complete mimeographed report are available from the Institute, 1741 New York Ave., NW., Washington 6, D. C.

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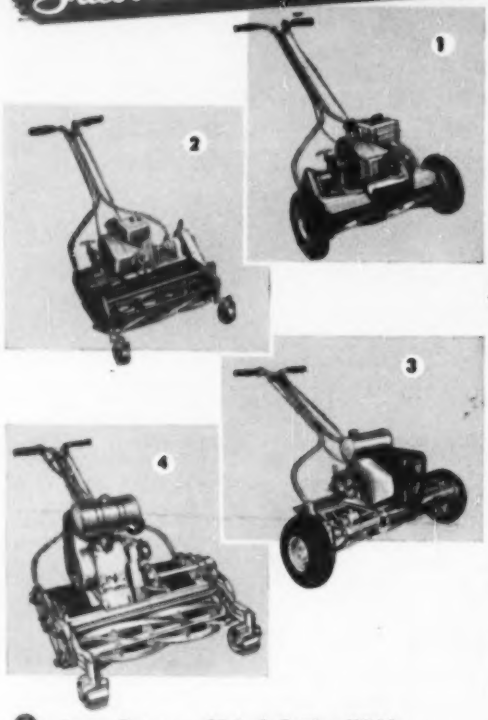

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Twelve Principles of Industrial Zoning

TO the end that industry shall no longer be the stepchild of zoning, the National Industrial Zoning Committee, made up of committees from six nationwide organizations,* has issued in pamphlet form a statement of "Principles of Industrial Zoning."

The pages are planned to illustrate the statement. Twelve principles are summarized in the headings of the pages as follows:

1. Most communities require a certain amount of industrial development to produce a sound economy.
2. Zoning controls are basic tools in the reservation of space for industry, guidance of industrial location into a desirable pattern, and provision of related facilities and areas needed for convenient and balanced economy.
3. Industrial use is a legitimate land use possessing integrity comparable to other classes of land use established under zoning and is entitled to protection against encroachment.
4. Through proper zoning, industrial and residential areas can be good neighbors.
5. Industry will continue to grow and most industries will require larger areas in the future.
6. There is need for a reclassification of industry based on modern manufacturing processes and the prevailing policy of plant construction so as to determine the desirability or lack of desirability for inclusion in a given area.
7. Industrial potentialities of lands bearing a favorable relationship to transportation should be recognized in the zoning process.
8. Industrial zoning and highway planning should go hand in hand.
9. Special consideration should be given to the street layout in industrial areas.
10. Zoning ordinances should be permissive rather than prohibitive.
11. A good zoning ordinance should be sufficiently definite to convey to a landowner a clear concept of what he can do with his land.
12. Industrial zoning can be most effective when considered on a metropolitan basis.

* These are: American Industrial Development Council; American Institute of Planners; American Railway Development Association; American Society of Civil Engineers; Association of State Planning and Development Agencies, and Society of Industrial Realtors.

Correspondence regarding this pamphlet or orders for copies may be directed to member organizations or to: Albert E. Redman, Secretary, National Industrial Zoning Committee, 820 Huntington Bank Building, Columbus 15, Ohio.

Cities Regulate Shopping-Center Districts

CITIES looking to their future are taking steps to regulate the growth of outlying neighborhood shopping centers, the American Society of Planning Officials reports.

In Niagara Falls, N. Y., a newly adopted zoning ordinance provides for a special shopping-center district to assure "the grouping of buildings on a parcel of land in such a manner as to constitute a harmonious, efficient, and convenient retail shopping center and to provide a means for permitting the establishment of such centers as a part of the development of parts of the city that at the time of the adoption of the ordinance consist of open acreage." Under the ordinance, a developer wishing to construct a regional shopping center must make application to the planning board for an amendment to the zoning ordinance, while, at the same time, submitting a site plan for approval.

A special community shopping-center development district is provided for in the Valparaiso, Ind., zoning ordinance also recently adopted. A community shopping center may be approved for any tract of land of not less than four acres if the development is designed as a single architectural unit with appropriate landscape architectural treatment of the entire unit area; and if at least twice the gross floor areas of all stores plus one vehicle parking space for each six seats in any theater or place of congregation is provided in off-street parking area.

In Colorado Springs, Colo., a new zoning ordinance provides for a neighborhood business zone. Among design and improvement standards specified are: service entrances and service yards which can be located only in the rear and side yards of the neighborhood business. Such areas must be screened from adjacent residential properties either by a solid wall, a latticed fence, or a compact screen of evergreens.

A proposed amendment to the zoning ordinance of Waterloo, Iowa, contains similar provisions for neighborhood shopping-center districts. Provisions are made for a height limitation of one story, a front yard of at least 20 feet, side yards when the district is adjacent to a residential district, and rear yards.

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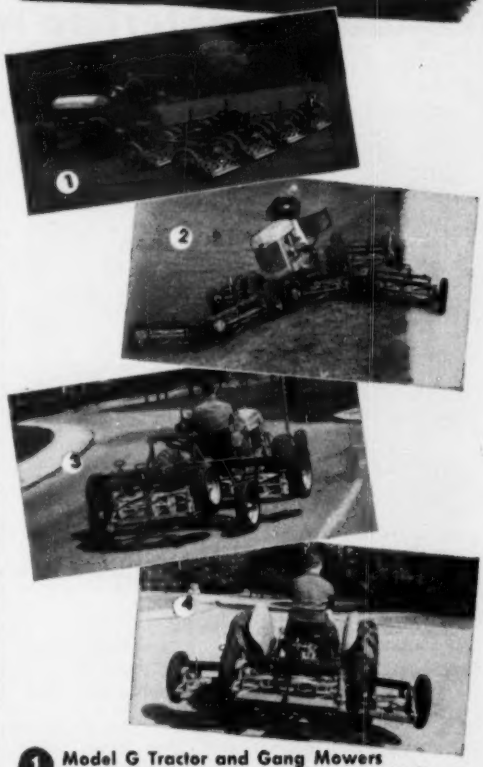

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A Fresh Look at City Transportation

What can be done to preserve mass transit as an effective part of a city's transportation system? Must it become a public operation to stem the threat of urban traffic strangulation?

By PARK H. MARTIN, *Executive Director*
Allegheny Conference on Community Development
Pittsburgh, Pa.

THIS article complements Col. S. H. Bingham's "Hope for Public Transit," published in the September 1951 issue of *The American City*. Where Colonel Bingham proposed a non-political City Transit Corporation to operate a big city's transit system, Mr. Martin shows why help must be extended to prevent collapse of service and the threat of urban strangulation by street congestion.

CONGESTION in the central business areas of cities is a threat to their stability, as evidenced by the growth of suburban shopping areas, resulting in little or no new building in central business districts and a decline of property values which becomes a serious matter in the city's financial program.

In Pittsburgh, for instance, the assessed valuations of land and buildings, excluding tax-exempt property, which had risen to an all-time high of $1,211,867,000 in 1936, had declined to $961,000,000 in 1947, a decrease of about 20.4%. During this period of time the percentage of loss in assessed values in the Triangle as a whole was 27%, with certain decadent areas showing a much higher percentage of loss. Largely because of the current Pittsburgh Improvement Program, the total city assessed valuation for taxable purposes has risen to $1,017,885,000 as of 1951. Not only have many cities encountered loss in assessed valuations in the central business district, they have also experienced a decline in the number of persons daily entering the central business district—another serious threat to the economic well-being of the area. In Pittsburgh, the number of people entering the Triangle on an average day between 8 a.m. and 6 p.m. ran as follows for given years:

1927	297,000
1937	252,000
1942	247,000
1947	308,000

The change in the trend in Pittsburgh can be attributed to a high level of business because of the war, and again to the Pittsburgh Improvement Program.

Changing Mode of Travel

In most cities there has been a steady change in the method of conveyance of people entering the business areas and in the general mode of travel. It has been from streetcars to buses and then from all forms of mass transit to private automobiles. In Pittsburgh the drift is shown from 1927 to 1942 in the mode of transportation of people into the Triangle:

	1927	1942
Pedestrians	14.5%	10.3%
Trains	10.5%	5.4%
Motor bus	1.0%	11.2%
Passenger auto and taxi	22.0%	25.9%
Streetcar	52.0%	47.2%

Since 1947, the high year in number of revenue passengers of the Pittsburgh Railways (289,000,000), there has been a decline in passengers up to and including the year 1950 (222,000,000 passengers) of 67,000,000 passengers or 23%. The decline of motor-bus passengers between these two years was 3,988,000. Since employment was substantially as high in 1950 as in 1947, the only answer that seems reasonable at all as to how these people traveled is by use of the private car.

Reports from other cities also indicate a decline in the use of mass transit, and an increase in the use of private cars, all of which adds to the congestion problem.

It is necessary here to discuss the relative economy of the use of street space between the mass carrier and the private car. I believe it is safe to say that *without mass transit in our cities we would have not congestion but stagnation.*

The decline in mass transit riding also threatens the financial stability of the operating transit companies by a decline in income. Added to this is the effect of inflation on their operating costs.

A Question—and My Answer

This brings me to the point of raising the question, *What must we do to preserve mass transit as an effective part of a city's transportation system?*

We have to first have a continued awareness on the part of both the public official and of the public as a whole that mass transportation is an essential part of our community life and community well-being.

Transit has to be considered as essential to the city's well-being as the water system that supplies the water we use, the sewers that carry off the wastes, and similar public utilities. We have to realize that *the day of mass transit as a monopoly went out when the general ownership and use of the automobile came in.* We may have to put some public dollars into mass-transit facilities, if they are to remain healthy and be the community asset they should be.

These dollars may be in the form of capital expenditures with the rider paying the operating costs. Certainly, in my opinion, what is an essential community service and not a monopoly should be relieved of taxes, paving costs, costs of snow removal, and many other restrictions and obligations that are now saddled on the mass carriers. In return, the mass carrier should be required to perform and provide adequate and satisfactory service.

In my opinion, unless this is done we may expect a continuing decline in mass transit as a useful mode of travel, and we may expect more congestion and confusion on the streets of our cities, and a parking demand that cities cannot meet.

Mass transit companies have been notoriously poor in their public relations, both as a policy matter and often on the part of the employee who meets the public. This must be rectified.

It is strange but true that public-utility monopolies such as light and power companies, and gas, water, and telephone companies, do a better public-relations job than transit companies which are competing for business with the private car.

How Can Public Funds Be Spent on Mass Carriers?

Obviously, public money cannot be spent for the benefit of a privately owned company operating for profit, even though it may be performing an essential public service.

I have strong reservations that in the

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larger cities, private ownership of transit facilities can survive. This is not necessarily true in smaller communities. It is only fair to say, however, that if private ownership could receive public financial aid, it could do as good a job as any other form of ownership and operation.

Since private ownership cannot be helped by public funds, there only remains public ownership in some form. This may be

(a) public ownership and operation, or

(b) public ownership, and operation by a private operator under contract, or

(c) a public-transit authority or a public-transit commission.

Advantages and Disadvantages

All three of the foregoing have the advantage over private ownership of being able to receive assistance in the form of tax relief and forms of subsidy. The ownership of the transit facilities is directly in the public under both (a) and (b), and indirectly at first, but eventually in the public under (c).

The fixing of the fare structure is directly in the hands of the publicly owned facility and also in an authority, which is not the case in private ownership. Under private ownership the company must file its new tariffs with the Public Utility Commission of the State, and such new tariffs may not be allowed until many months have elapsed, if allowed then. During this period of time, the company may be operating at a substantial loss.

Public ownership and operation is opposed by some on the ground that transit may become a political football. Authority ownership and operation has the advantage of less danger of this type of interference, although it may not be entirely free.

Normally, I am in favor of private ownership and operation. The experience in most large cities leads me to the conclusion that if mass transit is to continue to provide the essential community service required, it needs help. Certainly, today, transit with the strong competition of the automobile is not attractive for private investors.

Responsibility for Providing Parking Facilities

Highways, parking and mass transit are closely related. In my opinion, an authority or commission operation of mass transit should also be charged with providing those parking facilities that are regarded as a public responsibility. Public ownership could do this were it not for (a) the danger of becoming a political football, and (b) the fact that the credit of most cities would not stand the financial burden involved unless legislation were enacted relieving the city of responsibility for the debts of the transit operation.

Various cities are trying different approaches to the problem. Some instances are: Chicago and Boston, with a Transit Authority; Toronto and Cleveland, with Transit Commissions; Detroit, with municipal ownership; and Philadelphia and Baltimore, struggling under private ownership, as well as the City of Pittsburgh.

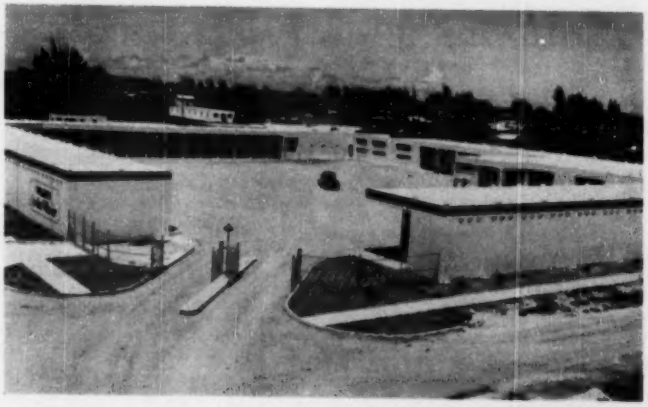
The Pittsburgh Railways Company emerged from 12 years of receivership on January 1, 1951. Its financial position is not good. Since January 5, 1948, there have been four fare raises, with another going into effect September 10. As already mentioned, there has been a decline of 67,000,000 passengers hauled in 1950 under the number hauled in 1947. The company is not providing the essential community service that is required, and its future as a private operation looks dismal.

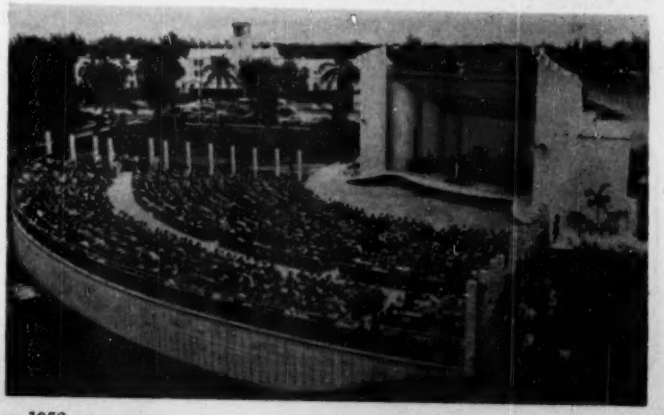
On the premise that cities need adequate transit facilities if they are to survive as satisfactory places in which to live and work, it seems essential that we must take a fresh look at our transit facilities and that we must regard them as being essential to the community welfare. When we, as the public, have accepted that premise, then we will be willing to extend such help as each individual case indicates as required. Unless we do, it is my opinion we can expect a continual decline in service, with eventual collapse in some cases and a growing amount of urban congestion almost to the point of stagnation.

Based on a talk given at the annual conference of the Governmental Research Association, in Washington, D. C., September 7, 1951.

New Municipal Garage and Bandshell At Hollywood, Fla.

(See page 171 of this issue)





CLAY PIPE—*ESSENTIAL • ECONOMICAL • EVERLASTING*

Carloads OF CLAY PIPE used in defense expansion at North Haven, Connecticut

Wherever the nation's defense program calls for expansion, Clay Pipe is in demand. Its protection is inherent in the pipe — can't chip off, squash out, or wear away, because Clay is *completely* safe — inside and outside, top and bottom, through and through. Without it, essential construction would be slowed to a standstill, and our cities would be ravaged by sickness. It's the *only* chemically inert pipe unaffected by sewer gases — the only proved-by-performance pipe that *can't wear out*. Be sure to specify it on all your jobs.

In the defense expansion program caused by the building of Pratt & Whitney's huge new aircraft engine plant, North Haven, Conn., over 15,000 feet of Vitrified Clay Pipe were installed. The new lines connect into the expanded municipal sewerage system, assuring corrosion-proof, never-wear-out service for this vital defense area.

NATIONAL CLAY PIPE MANUFACTURERS, INC.

311 High Long Bldg., 5 E. Long St., Columbus 15, Ohio
703 Ninth & Hill Bldg., Los Angeles 15, Calif.
100 N. LaSalle St., Rm. 2100, Chicago 2, Ill.
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Wherever Reliable, Performance-Proved Pipe Is Needed, Specifications Call for Vitrified Clay

Rantoul, Ill. (Chanute Field)	158,000 ft.
Orlando, Fla. (Air Force Base)	74,000 ft.
Morrisville, Pa. (New Steel Defense Plant)	300,000 ft.
Rapid City, S. D. (Air Base)	54,000 ft.
Eynon, Pa. (Gun Fire Control Plant)	120,000 ft.
Marion, N. C. (Municipal Expansion)	32,000 ft.
Needles, Calif. (Essential Ore)	87,000 ft.
Tucson, Ariz. (Air Base and Defense Plant)	440,000 ft.

Vitrified CLAY PIPE — CLAY PIPE NEVER WEARS OUT!

C-152-1

For Wise Timing of Capital Expenditures

Philadelphia's new debt-stabilization amendment aims at checking boom-time municipal borrowing and providing a reserve for years of depression

By KARL SCHOLZ
Professor of Economics
University of Pennsylvania
Philadelphia, Pa.

AN AMENDMENT to the Constitution of the Commonwealth of Pennsylvania, aimed at stabilizing the debt-making power of the City of Philadelphia and at providing a reserve of unimpaired borrowing power for possible future lean years, was ratified by the voters at the November 1951 elections. The amendment bases the debt limit of the city for non-self-supporting municipal indebtedness in any given year on 13½% of the average of taxable real-estate assessments in the city for the ten immediately preceding years, rather than on 10% of the current taxable real- and personal-property values, as heretofore.

Fiscal Innovation

This fiscal innovation for controlling and timing capital expenditures, financed with the aid of loan funds, seeks to correlate such outlays with the typical long-run cycles of real-estate values, observed in various American cities in the past.

During the 1920's, taxable property values in Philadelphia rose rapidly, and the non-self-supporting municipal indebtedness rose almost parallel with rising assessments. But during the depression years of the 1930's, real property assessments declined, and the city lacked unimpaired legal borrowing power not only for the completion of various municipal improvements begun during the "prosperous" twenties, but also to finance useful new public projects with loan funds, at a time when loanable funds were lying idle, costs of materials were declining, and unemployment was increasing. The debt-stabilization amendment aims at reversing the debt-making power of the city, checking borrowing for capital improvements during boom years, and providing a reserve of borrowing power for years of depression.

In the course of its long and somewhat varied history, since the debt-stabilization resolution was first introduced in the State Legislature in 1937, it has met with both wide endorsement and outspoken opposition and criticism. Much credit for its final passage is due to Otto T. Mallery, of Philadelphia, for his untiring effort in soliciting popular support of the measure, and to State Representative Charles C. Smith, of Philadelphia, for introducing and actively sponsoring the resolution finally adopted by the State Legislature.

Opposition Arguments

Opposition to the resolution came from certain city officials, on the ground that the suggestion was too new, that it had not been tried out elsewhere, and that it was too academic. What reason was there to assume, it was asked, that the real-estate cycles, observed in American cities in the past, would recur in the future?

But, even if one were sufficiently optimistic to believe that the major cyclical swings in urban real-estate activity were a thing of the past, and hence that taxable property values would not fluctuate in the future, a municipal debt limit based on a long-term average of taxable real-estate values would still tend to be more stable than that based on annual assessments. This is particularly true in cities in which average current taxable values represent only a fraction of actual market values of taxable properties.

The relative ease with which current assessment may be "adjusted" to create additional borrowing power, particularly in prosperous times when property values are moving upward, is well recognized. But by requiring a ten-year average of assessments as borrowing basis, the effect of any such manipulation will be very much reduced.

The amendment has also been criticised by certain real-estate interests because it omitted personal property from borrowing base. The weakness of this argument is rather apparent. A major item of personal property in Philadelphia is real-estate mortgages, which cannot "hide or run away." If municipal borrowing were based on both real and personal taxable-property values, not only would the taxable value of real estate be included in the borrowing base, but also the value of mortgage debts against such real estate—a double counting of real-estate values.

The 13½% rate, provided in the amendment, as compared with the 10% rate, pertaining heretofore, is not, as was erroneously stated on the November ballot, designed to raise the borrowing power of the city. It merely represents the desired adjustment in rates to compensate for the removal of personal property from the borrowing base.

In spite of the many-sided objections and criticisms, often reflecting purely partisan interests, the amendment has received its final approval, and is now part of the basic law of the Commonwealth. Its likely beneficial effects on future municipal capital expenditures, financed with the aid of loan funds, will make themselves felt, if and when our economy should be confronted with another major economic recession, after the present defense boom has run its course. Only then will a possible decline in taxable-real-estate values reveal the reserve of borrowing power provided by the new borrowing base. On the other hand, while the current wave of prosperity continues, with concomitant annual increases in real-estate values in Philadelphia, the borrowing power of the city will be held down. In 1952 the debt limit is more than $18,000,000 lower under the provisions of the amendment than it would have been under the former base.

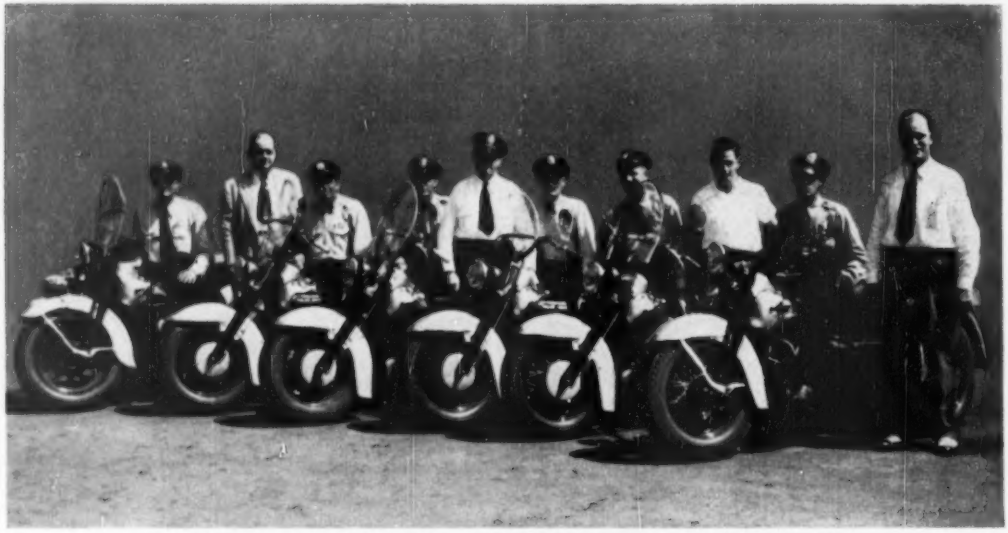
Stimulating Effect

The stimulating effect on income and employment, derived from bringing idle funds and idle men together in periods of business decline, is widely recognized. Although the sums involved in providing a reserve of borrowing power in Philadelphia for possible lean years, under the stabilization amendment, may appear quite trivial and insignificant, it is well to remember that it is "the little drops of water, and the little grains of sand," which "make the mighty ocean and the pleasant land."

Similar measures, adopted by other cities throughout the country, may, in the aggregate, help immeasurably toward creating a sounder basis than heretofore for timing useful municipal capital expenditures, financed with loan funds, and thereby aid in achieving a greater degree of stability in our economy in the future than in the past.

To Cope With Increased Traffic, Tuscaloosa, Alabama, Uses

HARLEY-DAVIDSONS Exclusively



From left to right are: Officer E. G. Harless, City Public Safety Commissioner J. Frank Livingston, Officers C. H. Young and E. F. Probst, Assistant Chief of Police D. S. Fitts, Officers R. C. Sawyer and D. D. Darnell, Harley-Davidson shop foreman Elbert Carr, Officer W. C. Caruthers and Harley-Davidson dealer Herman Dahlke.

TRAFFIC fatalities definitely ARE NOT going up in Tuscaloosa, Alabama. This busy southern city sees to it that adequate control is maintained by its fine squad of officers mounted on Harley-Davidsons exclusively. The men and machines shown here are on daily duty carrying out Tuscaloosa's program of traffic control and accident prevention. Whether large or small, your city can benefit through the use of big, powerful Harley-Davidsons — built especially for police work. Their easy handling, high acceleration, effortless steering, road-hugging stability, oil-cushioned riding ease and other features help the mounted officer to perform his duties with top-notch efficiency. Ask your dealer to call on you with further information about Harley-Davidson Police Motorcycles, Servi-Cars and Sidecars — or write

HARLEY-DAVIDSON MOTOR COMPANY, Milwaukee 1, Wisconsin

POLICE MOTORCYCLE BOOKLET

You'll find many helpful ideas for your traffic department, in this new, illustrated 16-page booklet. It's full of information about police motorcycles and their use in law enforcement and accident prevention work. Your copy will be sent promptly on request. No obligation. Write today.

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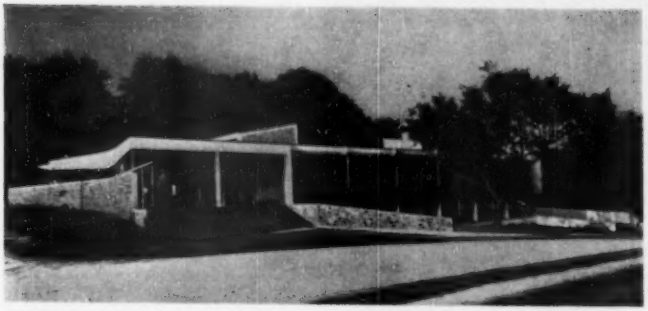


The Jaycee War Memorial Building, erected as a tribute to those who fought in World War II by Tulsa business leaders and Junior Chamber of Commerce.

Jaycees Have New Tulsa Headquarters Building

A NEW $300,000 War Memorial Building, dedicated in August 1951 as permanent national and international headquarters for the United States Junior Chamber of Commerce, in Tulsa, Okla., is giving added impetus to Jaycee activities. The building, constructed of concrete, steel, and glass, overlooks a large municipal park, with the Tulsa skyline visible through the windows of the front offices. Tulsa leaders contributed $100,000 of the cost; the other $200,000 came from the 180,000 young men in the organization, or was earned by them through their civic projects.

The Jaycee headquarters does not control or supervise the operation of local organizations. Its responsibilities are to activate and administer the policies and programs as established by the national board of directors. However, the headquarters programming department is of special interest to local officials and community leaders, as this department, through the national chairmen, prepares program manuals, etc., on civic projects. It edits *Action*, the administration publication of the organization. It is responsible for the preparation of the quarterly Operations Kit, which contains suggested projects and is mailed to each of the 200 local organizations. Typical projects included are safety, fire prevention, Get-Out-the-Vote, etc. An extensive film library also is maintained by this department.

The Jaycee Creed

We believe:

That faith in God gives meaning and purpose to human life;

That the brotherhood of man transcends the sovereignty of nations;

That economic justice can best be won by free men through free enterprise;

That government should be of laws rather than of men;

That earth's great treasure lies in human personality;

And that service to humanity is the best work of life.

Tributes for Outstanding Community Service

THE COLUMBUS CITIZEN, one of Ohio's leading daily newspapers, has adopted a scheme of recognition for individual service in the community which seems worthy of much wider emulation elsewhere. Every year, the editorial staff of *The Citizen* picks "Columbus' 10 outstanding men of the year," and the front page of the January 1 issue is devoted to the photos and citations about these men.

As will be noted, Mayor James A. Rhodes is one of the 10, and several other public officials are also included, such as Health Commissioner Dr. Ollie M. Goodloe, and School Superintendent Novice G. Fawcett. But the citations also make note of other worth-while community contributions, such as developing a church into a real community center, working to make the United Nations a force for peace in Columbus and Franklin County, establishing an effective local Office of Price Stabilization, conducting an effective law-enforcement fight against vice and crime, and heading a United Appeals drive.

They Rendered Great Service to Our Community

Rev. James W. Parrish — John M. Vorys — Paul Walters — Albert Cook — Edward T. Wagner

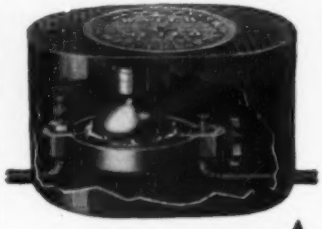
Worked Long and Hard to Improve Lot of Their Neighbors . . .

The Citizen Picks Columbus' 10 Outstanding Men of 1951

Dr. Ollie M. Goodloe — Charles Y. Lazarus — Novice G. Fawcett — James A. Rhodes — Edward A. Sensibaugh

CLARK METER BOXES AND COVERS
OF CAST IRON

Left, No. 16 Clark Wonder Lock Meter Box Round....16" and 18" diameters. Large 13" lid.



Above, No. 11 Oval Clark Wonder Lock Meter Box, especially for warmer climates. H-11", L-18", W-12".

Below, A-2-13 Clark Meter Box Cover with screw lock. Height 4", lid opening 13".

Above, A-2-11 Clark Single Lid Meter Box Cover, 4" throat. Also available in 6" and 9" throat.

Below, B-2-11-L Clark Double Lid Meter Box Cover, 6" throat. Also available in 4" and 9" throat.

Above, AA-3-12 Clark Meter Box Cover with 13" Wonder Lock Lid, for use with 15" (illustrated), 18" and 20" box body.

Improved Screw Lock with strong forged bronze bolt.

Wonder Lock Lid (bottom view) showing forged bronze bars.

Perfect Lock of one-piece manganese bronze forging.

Write for New Catalog

H. W. CLARK CO.

MATTOON, ILLINOIS

You're Losing Money On Old Fashioned Metering

Modern Systems Eliminate Many Dangers, Expenses

A recent investigation shows that many cities and towns still use old fashioned water systems where meters are installed in basements, kitchens, etc., where enormous wastes of water and excessive pumping result from many leaks in service lines not registered by meters; where meter readings are slow, expensive jobs; where meters are often damaged by forced-back hot water.

It seems strange that residents and officials of so many communities permit these wastes, extra expenses and dangers to continue when actual records show definite proof that modern meter-at-the-curb systems eliminate all such disadvantages. Here, for example, is what a Kentucky water works official has to say:

Most Satisfactory

"Practically all of our meters are now installed at the curb and we find it to be the most satisfactory location. Meters can be read, tested, or repaired at any time. Service can be discontinued at any time. Repairs to the meter can be made without any damage to private property or inconvenience to the property owner. Maintenance cost is decreased because property owner, instead of the Water Works Company, maintains service line from curb to house. Waste of water through leaks in service lines from curb to house, when not repaired, increases revenue."

Many Advantages

Here is another water company official's letter to H. W. Clark Company, manufacturer of meter boxes, covers, and meter yokes:

"Now that our system is completely installed, we are exceedingly well pleased with the equipment and can sum up our satisfaction in a very few words. Clark Meter Boxes and Meter Coupling Yokes are easily and quickly installed. The equipment gives the meter absolute protection against damage either by weather or tampering individuals. It makes for rapid and accurate reading of the meter. The box can be unlocked, lid removed, meter read and lid replaced and locked in but a few seconds. It allows for easy testing or replacing of meters at any time, day or night, without bothering the customer. Because of the convenient and accurate reading, we are able to bill our customers promptly—and thereby get our collections in promptly, too.

"The Clark System of Meter Protection was purchased after very careful consideration of other types offered—and our experience with it has thoroughly justified our selection."

Equally important, meters are the cash registers of your revenue and worthy of complete protection. But broken meter dials and glasses, by-passed connections and reversed meters are practically unknown in Clark Meter Boxes, says the manufacturer, H. W. Clark Company, Mattoon, Illinois. We suggest that you write for more detailed information. (adv.)

Zoning and Planning Notes

Edited by NORMAN WILLIAMS, Jr.

Prohibition of Public High School in Village Held Invalid

NEW YORK. *Union Free School District No. 14 of Town of Hempstead v. Village of Hewlett Bay Park*, 107 N. Y. Supplement (2d) 858 (Supreme Court, Appellate Division, October 29, 1951).

In this case (affirming a decision previously reported in this column), the Court held that, since a school district had the statutory duty to provide educational facilities, a village zoning ordinance could not prevent the fulfillment of this duty by prohibiting a school within the boundaries of the village. The Court held that a village could not exclude public schools without specific statutory authorization, and noted that the enabling act indicated that zoning regulations should facilitate the adequate provision of schools.

Parking Lots

MARYLAND. *Cleland v. Mayor and City Council of Baltimore*, 84 Atlantic (2d) 49 (Court of Appeals, November 2, 1951).

MINNESOTA. *State v. United Parking Stations, Inc.*, 50 North Western (2d) 50 (Supreme Court, November 16, 1951).

In the Baltimore case, medical offices were located as a non-conforming use in a residence district, with an accessory garage on an adjoining lot; and the doctors applied for a permit to use the rear of the latter lot as a parking area for the doctors and their employees. A commercial zone adjoined the property. The Board of Appeals granted the permit under two provisions of the Baltimore zoning ordinance, one authorizing permits for necessary or incidental uses along with a non-conforming use in a residence district, and another allowing any use permitted in either district within 100 feet of a district boundary. When neighboring owners appealed from this decision, the Court held that a permit in this case was improper. While it would be convenient for the offices to have a parking area near by, a special exception should be granted only in cases of urgent necessity, and a parking lot for doctors' offices was "neither usual nor necessary." In effect, the decision limited exceptions to uses which were necessary and incidental.

This case illustrates the widespread confusion as to the proper basis for an "exception" or a "special permit," particularly as compared to a variance for unnecessary hardship. The decision in this case derives from the general policy of the law against the extension of non-conforming uses. However, the approach in this case would not be appropriate for other types of "exceptions"; and the attitude toward accessory parking spaces is rather archaic.

In the Minnesota case, a Minneapolis ordinance required open parking lots to post, at all entrances and exits, signs showing the name of the operator of the lot, the number of his license, and the rates charged. In this case a sign was placed on a shanty within the lot, near an entrance on an alley, but a long way from the street entrance—and not visible from either entrance. The Court held that the requirement of posting prices was reasonable in order to protect motorists and to prevent excessive entering and leaving a parking lot, and that there was not substantial compliance in this case. The Court also stated:

> The effectiveness of off-street parking facilities is known to have a direct bearing on the economic development of a municipality, as well as the safety with which drivers may travel its streets.

The traditional practice of zoning for business a strip 100 feet deep on both sides of major arteries has proven quite inadequate for the needs of modern business, particularly with respect to parking; and various solutions have sought to obtain room for parking usually behind the main commercial frontage. Some cities have created a special district for parking; in others, as here, parking has been permitted in the residence district behind, under variances. Under another alternative, the commercial frontage can be mapped deeper, with special restrictions on the use of such property where it adjoins a street across from residences.

No Right of Appeal By Zoning Board

OHIO. *Minnis v. Hamilton County Board of Zoning Appeals*, 101 North Eastern (2d) 388 (Court of Appeals [intermediate court], June 25, 1951).

The Hamilton County Zoning Board refused to approve an extension of a non-conforming use in the County; and when a Court reversed this decision, the Zoning Board appealed. The intermediate appellate Court, raising the question on its own motion, held that the Zoning Board had no right to take an appeal, either at common law or by special statutory authorization, and so dismissed the appeal.

The Problems of Building An Apartment House Along A Municipal Boundary

MASSACHUSETTS. *Co-Ray Realty Co. v. Board of Zoning Adjustment of Boston*, 101 North Eastern (2d) 888 (Supreme Judicial Court, November 16, 1951).

This decision is another episode in an extended controversy over the proposed erection of an apartment house, with 28 dwelling units and over 2½ stories high, on a lot located mostly in Boston but partly in Brookline. Some other apartment buildings existed not too far away in Boston, but the area near by in Brookline was single-family. Since the rear part of the lot, located in Brookline, was to be used as an appurtenance to the apartment house, a previous decision held that such use would constitute a violation of the zoning law of Brookline (See 326 Massachusetts 206, 93 North Eastern (2d) 581). Subsequently, the area in Boston was rezoned to a residence district which limited the height of buildings to 2½ stories. The developer did not receive actual notice of this change, although notice was published in a newspaper and a letter was sent, which did not arrive. The Court upheld the change on the ground that there was sufficient compliance with the statutory requirement for notice, and that the change was not arbitrary.

Abandonment of Non-Conforming Use

DELAWARE. In re *Auditorium, Inc.*, 84 Atlantic (2d) 508 (Superior Court, October 30, 1951).

An auditorium used for sporting events was located in a small park in Wilmington before the Wilmington zoning ordinance was passed, and was originally surrounded by vacant land. In 1940 the Board of Appeals granted permission to change a candy store and soda fountain on the premises to a furniture store, and the owner was allowed to reserve the right to use the premises for auditorium purposes. When the owner sought a permit to make repairs in order to reopen the auditorium, the application was denied on the ground that the premises constituted a non-conforming use in a residence district. The prospective lessee challenged the denial on the grounds (inter alia) that the site was in a business district, that the boundaries on the zoning map were so vague that it was impossible to tell which district it was in, that no zoning map was available, and that the refusal of the permit violated his constitutional rights. The Court held in favor of the city.

While the Wilmington zoning map was obviously badly drawn and difficult to locate, the Court felt able to determine that the premises were in either a "residence" or an "apartment" district. Since the non-conforming use for sporting events had been abandoned for considerably more than 2 years, the Court held that the Wilmington zoning ordinance forbade a change back from a furniture store to a sporting auditorium, particularly since the latter was more objectionable, and further that under the ordinance the Board had no right to attempt to recognize the owner's reservation of a right of reversion. The Court noted that the neighborhood had become largely residential.

...150,000 HORSEPOWER to produce *Kaiser Aluminum*

THE *80 Nordberg Gas Burning Radial Engines* in the new Chalmette, Louisiana, reduction plant each develop 1820 horsepower at 400 rpm, and drive 1290 kilowatt direct current generators to provide the vast amount of electricity needed to produce aluminum. *First metal was poured less than ten months after construction of this plant was started.*

This efficient method of generating direct current eliminates the need for rectifier stations, with the consequent losses that would occur in transforming alternating current to direct current.

Nordberg Radial Engines are designed to give simple, compact, economical power. Their ability to burn gas efficiently permits this large internal combustion engine plant, the largest in Louisiana, to produce power 24 hours a day—day in, day out . . . at very low generating cost, which compares most favorably with hydro-electric or steam power.

NORDBERG MFG. CO., *Milwaukee, Wisconsin*

Builders of America's Largest Line of Heavy Duty Diesel Engines, from 10 to 10,000 H.P.

P152

BUSCH-SULZER
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NORDBERG
DIESEL ENGINES

Legal Notes and Decisions

Prepared by NATIONAL INSTITUTE OF MUNICIPAL LAW OFFICERS
Charles S. Rhyne, General Counsel

Annexation—Action to Determine Validity Barred by Laches

In action against town to determine validity of annexation of adjacent area, held since suit was begun over five months after publication of election results it was barred by laches. *Hite* v. *Town of West Columbia*, 66 S. E. (2d) 427 (S.C., Aug. 13, 1951).

City-County—County Liable for Negligence of Deputy Marshal Of Municipal Court

In action against city and county for damages sustained by reason of negligent operation of an automobile by deputy marshal of municipal court, held that county only would be liable where deputy marshal of municipal court of the city was acting within scope of his employment as deputy marshal. *Villanazul* v. *City of Los Angeles et al.*, 235 Pac. (2d) 16 (Calif., Aug. 31, 1951).

City Employees—Salary Provisions Of Home-Rule Act Not Governed By General Village Act

In action by Village of Rockwood seeking accounting by defendants of salaries claimed to have been paid contrary to law, held under home-rule act and charter provisions allowing Common Council to fix salaries to be effective after adoption at village election, salaries of elected officials were governed by home-rule act and not by limitations of general village act. *Gildersleeve* v. *Lamont et al.*, 49 N. W. (2d) 36 (Mich., Sept. 5, 1951).

Drainage Ditch—Dedication to Public—Nuisance—Easement by Prescription

In action by city against landowner to enjoin interference with flow of water in drainage ditch across lot of landowner and for abatement of nuisance in obstructing ditch, held evidence was insufficient to establish implied dedication of ditch to public use or that city by prescription acquired an easement for the ditch. *Town of Paden City* v. *Felton*, 66 S. E. (2d) 280 (W. Va. S. Ct. of App., June 22, 1951).

Elections—Validity of Bond Election On Same Day as Regular Municipal Elections

In action by city to determine whether it could legally hold a special bond election on the same day as it was required by law to hold its regular elections for the election of city commissioners, held that city was legally authorized to do so. *State* v. *City of Miami*, 54 So. (2d) 250 (Fla., Sept. 21, 1951).

Eminent Domain—Airport

In action by city to condemn two improved land tracts for extending and improving airport, held that evidence of sales of four farms which were substantially dissimilar from two tracts of land which city was seeking to condemn was inadmissible. *City of Chicago* v. *Harbecke*, 100 N. E. (2d) 616 (Ill., May 24, 1951).

Eminent Domain — Damage to Business as Separate Item of Compensation

In action by city to condemn portion of defendant's business and residential property, held that testimony of expert witness as to damage to business as separate item was not admissible but that such testimony was admissible only as affecting market value of remaining land and improvements for uses to which they were adopted and being put. *City of Dallas* v. *Pasolo*, 242 S. W. (2d) 176 (Tex., Oct. 3, 1951).

Fire Hazard—Removal of Building Constituting

In action to recover on fire policy, held that Oklahoma statute authorizing state fire marshal to order removal of building constituting fire hazard was not invalid for failure to prescribe sufficient standards for its administration and that statute was applicable in city having home-rule charter. *American Home Fire Assur. Co.* v. *Mid-West Enterprise Co.*, 189 Fed. (2d) 538 (U. S. C. A. 10th, May 21, 1951).

License Tax—Retailer's Occupation Tax Act—Doing Business under—Voting Machines

In action for declaratory judgment that sales of voting machines did not subject plaintiff to Retailer's Occupation Tax Act, held that where activity of plaintiff, a foreign corporation, consisted only of promotional work, delivery of bids, and delivery and servicing of machines, and bids were prepared, contracts executed, and machines manufactured in New York, corporation was not subject to Retailer's Occupation Tax Act. *Automatic Voting Machines Corp.* v. *Daley et al.*, 100 N. E. (2d) 591 (Ill., May 24, 1951).

Pension—Firemen—Arthritis as Disability in Line of Duty

In action for disability pension out of Firemen's Relief and Retirement Fund, held that finding that hypertrophic arthritis permanently and totally disabling the fireman was not causally connected with performance of his duties was reasonably supported by substantial evidence. *Board of Firemen's Relief and Retirement Fund of Houston* v. *Marks*, 242 S. W. (2d) 181 (Texas, Oct. 3, 1951).

Probation Officer—Power of City Council to Discharge for Reasons Of Economy

In action to compel city council to approve payment of plaintiff's compensation as probationary police officer of the city, held under its charter the city council had no power to discharge plaintiff for reasons of economy. *Ture* v. *Council of the City of Ecorse*, 49 N. W. (2d) 339 (Mich., Oct. 1, 1951).

Sewage Disposal Plant—City Liability for Nuisance

In action against city for damages to lake resulting from maintenance of nuisance in operation of sewage-disposal plant, held that evidence as to value of cabin sites, rental income, and granting of fishing permits on commercial basis was properly admitted. *City of Bethany* v. *Twin Lakes*, 236 Pac. (2d) 255 (Okla., Oct. 2, 1951).

Sidewalk—City Liability for Hole In

In action against city for injuries sustained when plaintiff came upon hole in sidewalk, tested and then stepped upon stone in center of hole in order to cross, but stone gave way and he fell, held that question of contributory negligence and assumption of risk were for jury. *Collins* v. *City of Warren*, 100 N. E. (2d) 538 (Ohio App.).

Streets—Widening—Abutting Owners Required to Alter Premises to Furnish Lateral Support

In action to determine right of City of Louisville and state to widen certain streets, held that where city conveyed certain streets to state which proposed to widen them and narrow width of sidewalks, abutting owners were required to bear expense of altering premises so as to furnish adequate lateral support. *Levy* v. *Curlin et al.*, 241 S. W. (2d) 997 (Ky. App., Aug. 30, 1951).

Taxation—Road Levy—City-County

In action by city against county to recover one-half of road taxes levied and collected by county on property located in city, held that under statute providing that county can impose levy for maintenance and/or construction of roads and bridges not to exceed 7 mills per year, county could make separate levy for roads and bridges, and city was not entitled to one-half of taxes levied for bridges. *City of McComb* v. *Pike County*, 54 So. (2d) 171 (Miss., Sept. 24, 1951).

Tort—City Liability for Damage Caused by Street Cleaning Truck

In action against city for personal injuries sustained when struck by truck operated by city while it was being backed in alley, held State Motor Vehicle Law did not impose liability on city for damage caused by truck being used in governmental function such as cleaning streets. *Hayes* v. *City of Kansas City*, 241 S. W. (2d) 888 (Mo., July 9, 1951).

Veterans' Preference Act—10-Point Bonus as Applied to Promotions

In action to determine validity of Veterans' Preference Act providing that a ten-point bonus be given to veterans who successfully pass an examination, held such provision is invalid as applied to promotional examinations, since it places far too great value on benefit to public service of military training of veterans. *Commonwealth ex rel. Maurer, D. A. of Philadelphia County* v. *O'Neill*, 83 Atl. (2d) 382 (Pa., Sept. 24, 1951).

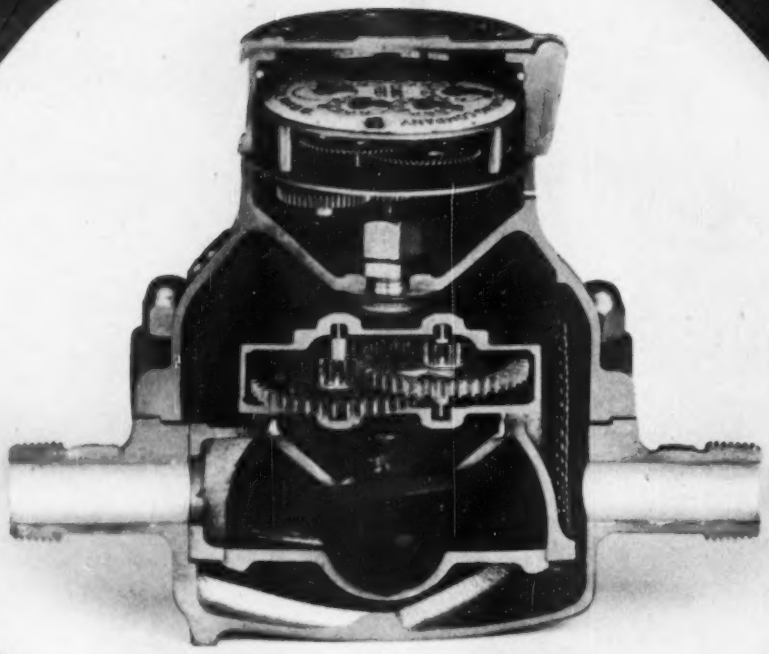
Water Works—City Enjoined from Diverting Water from River

In action by appropriator of water against city to enjoin city from appropriating water from river during water shortage, held evidence sustained right of water appropriator to an injunction over objections of city that public interest would be seriously and adversely affected. *Bennett* v. *City of Salem*, 235 Pac. (2d) 772 (Ore., Sept. 26, 1951).

Water Works—Engineer's Obligation To Prepare Plans Under Contract of Employment

In action against town to recover for engineering services rendered under contract of employment, held that engineer was obligated under contract of employment to prepare plans and specifications suitable for construction of a water system costing no more than their estimate which had been incorporated into the plan and system ordinance. *Batchelder* v. *Town of Westport*, 235 Pac. (2d) 471 (Wash., Sept. 6, 1951).

HERSEY



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Recent City Manager Appointments

The following portraits are of city managers whose appointments have been announced in preceding issues of *The American City*

Gerald Hartman
Colby, Kans.

J. B. Mobley, Jr.
Vero Beach, Fla.

William S. Coburn
Elizabeth City, Va.

L. E. Stark
Garland, Texas

Charles Chevalier
Ashland, N. H.

ROBERT P. AEX, former city comptroller of Rochester, has succeeded FRED D. BAYNE as city manager of Newburgh, N. Y.

OTIS L. BARBARICK, former mayor of Springfield, has been appointed to take ARTHUR J. MULVIHILL'S place as manager of Lebanon, Mo.

Berwick, Maine, has appointed JOHN P. BIBBER to city manager position vacated by WARREN E. KNOWLES. Mr. Bibber was manager of Ilesboro, Maine.

JOHN M. BIERY, former manager of Midland, Mich., has succeeded KENNETH R. CARD as manager of Colorado Springs, Colo.

The first manager of Florence, Colo., is CURTIS H. BLYTH, former assistant manager of the Village of Mound, Minn.

FERNAND BOURASSA, former assistant city engineer at Trois Rivieres, Quebec, succeeds ARMAND GAGNON as manager of La Tuque, Quebec.

The new manager of St. Louis, Mich., is JAMES R. BURCH, former assistant city engineer at Kokomo, Ind. FRANK B. HOUSEL was the previous manager of St. Louis.

ALLEN B. CARTER has been reappointed to the city manager position at Elko, Nev.

MAURICE E. COLE has succeeded ELMER R. CROSS as manager of Lexington, Nebr. Mr. Cole was in a private business at Rawlins, Wyo.

Albuquerque, N. M., has appointed EDMUND L. ENGLE to the city manager position vacated by CHARLES E. WELLS. Mr. Engle was a former city planning engineer.

BERT W. FULFORD, former school principal, has been appointed to take A. O. BROWN'S place as manager of Gainesville, Ga.

H. H. GEORGE, III, former director of public works, has been appointed manager of Norfolk, Va., succeeding C. A. HARRELL.

Sanford, Fla., has appointed JOHN M. GILLON, former city building inspector, to the manager position. CLIFFORD MCKIBBEN, Jr., was the previous manager of Sanford.

ROBERT HARP, former assistant to the city manager of Yonkers, N. Y., was appointed first manager of North Adams, Mass., beginning February 1.

The first manager of San Antonio, Texas, is C. A. HARRELL, who was previously at Norfolk, Va.

OSCAR HESCH has succeeded MALCOLM RHOADS as manager of Newport, Ky. Mr. Hesch was previously at Newport, before Mr. Rhoads.

HAYDEN B. JOHNSON is the first manager of Poughkeepsie, N. Y. He was executive director of Poughkeepsie Area Development Association, Inc.

WARREN E. KNOWLES, former manager of Berwick, Maine, succeeds L. HENRY BAILEY at Derry, N. H.

Fort Lauderdale, Fla., has appointed H. M. LINK, former assistant city manager at Miami Beach. ROBERT LOWRY was the previous manager of Fort Lauderdale.

DANIEL E. MCLEAN, former mayor of Beverly, has accepted the appointment as the first manager of Haverhill, Mass.

Fairfax County, Va., has appointed CARLTON C. MASSEY as its first manager. Mr. Massey was the previous manager of Henrico County, Richmond, Va.

THEODORE M. NELSON is the new manager of Bethel, Vt., succeeding WILLIAM P. HATCH. Mr. Nelson was an assistant to R. L. PRICE in Dover, N. H.

C. G. REITER, former manager of Coos Bay, has been appointed manager of Albany, Ore. EDWIN F. FORTMILLER was the previous manager of Albany.

Monte Vista, Colo., has appointed ARTHUR RILEY, former water commissioner, to succeed GLENN WATSON.

GEORGE J. SCHAEFER, a former radio writer and manager of radio stations, is the new manager of Covington, Ky. EDWARD B. ABBETT was the previous manager.

San Bruno, Calif., has appointed M. W. SLANKARD as its first manager. He was the former manager of Tillamook, Ore.

ROBERT C. STOREY, former manager of Mound, Minn., has been appointed the first manager of Alamosa, Colo.

Oberlin, Ohio, has appointed PHILIP ZAHM, former assistant city manager, as its new manager for a period of six months. Mr. Zahm succeeded his father, H. VIC ZAHM.

CLARENCE E. RIDLEY
Director
International City Managers' Association

Selected Municipal Bond Sales, January 7-9, 1952

Date of Sale		*Amount*	*Purpose*	*Average Maturity (Years)*	*Net Interest Cost Per Cent*
1-7	Quincy, Mass.	$ 1,960,000	School	10	1.708
1-8	Albuquerque, N. M.	5,083,000	Var. Imp.	12	2.653
1-8	Boston Metropolitan Dist., Mass.	4,150,000	Various	19-5/6	2.081
1-8	Detroit, Mich.	300,000	Paving	3	1.68
1-8	Griffin, Ga.	2,500,000	Water and Sewer Rev.	18-2/3	3.099
1-8	Hamden, Conn.	1,665,000	School and Police	9-2/3	1.708
1-8	Ocala, Fla.	350,000	Electric Rev.	13	2.236
1-8	Paris, Ky.	750,000	Industrial Rev.	11-3/4	3.908
1-8	Sacramento Municipal Utility Dist., Calif.	600,000	Electric System	6	1.445
1-8	Seattle, Wash.	28,000,000	Electric Rev.	27-2/3	2.814
1-9	State of California	25,000,000	School	14-5/6	1.7996
	State of California	25,000,000	Veterans'	11-2/3	1.728
1-9	Cheshire, Conn.	1,200,000	High School	10-1/3	1.765

Conventions — When and Where

Conventions listed this month for the first time are indicated by an asterisk (*)

***Feb. 13—Newark, N. J.**
American Water Works Association—New Jersey Section. Winter Meeting (Essex House). Sec., C. B. Tygert, Box 178, Newark 1, N. J.

***Feb. 13-15—Indianapolis, Ind.**
American Water Works Association—Indiana Section. Annual Meeting (Lincoln Hotel). Sec., George G. Fassnacht, 366 Good Ave., Indianapolis 19, Ind.

Feb. 25-28—Detroit, Mich.
Associated General Contractors of America, Inc. Annual Meeting (Statler Hotel). Managing Director, H. E. Foreman, 1227 Muncey Bldg., Washington, D. C.

Feb. 27-March 1—Milwaukee, Wis.
Community Chests and Councils of America, Inc. Bi-Annual Meeting (Hotel Schroeder). Exec. Dir., Ralph H. Blanchard, 155 E. 44th St., New York 17, N. Y.

Feb. 28-March 1—Chicago, Ill.
American Concrete Pipe Association. Annual Convention (Drake Hotel). Managing Dir., Howard F. Peckworth, 228 N. LaSalle St., Chicago 1, Ill.

March 3-7—Atlantic City, N. J.
Association of Highway Officials of the North Atlantic States. Annual Convention (Traymore Hotel). Sec.-Treas., A. Lee Grover, 1035 Parkway Ave., Trenton, N. J.

March 9-13—College Station, Texas
Texas Water and Sewage Works Association. Annual Meeting (Texas A & M College). Sec., V. M. Ehlers, 501 W. 33rd St., Austin, Texas.

March 12-14—Atlantic City, N. J.
New Jersey Mosquito Extermination Association. Annual Meeting (Hotel Haddon Hall). Exec. Sec., Bailey B. Pepper, Experiment Station, New Brunswick, N. J.

March 12-14—Atlantic City, N. J.
New Jersey Sewage and Industrial Wastes Association. Annual Meeting (Hotel Traymore). Sec.-Treas., Michael S. Kachorsky, P. O. Box 766, Manville, N. J.

***March 20—Boston, Mass.**
American Water Works Association—New England Section. Business Meeting (Hotel Statler). Sec., G. G. Bogren, Weston & Sampson, 14 Beacon St., Boston 8, Mass.

***March 24-26—Augusta, Ga.**
American Water Works Association—Southeastern Section. Annual Meeting (Bon Air Hotel). Sec., T. A. Kolb, 89 Alexander St., Charleston, S. C.

***March 26-28—Chicago, Ill.**
American Water Works Association—Illinois Section. Annual Meeting (LaSalle Hotel). Sec., J. Leslie Hart, Western Sales Manager, U. S. Pipe & Foundry Co., 122 S. Michigan Ave., Chicago 3, Ill.

April 3-5—Mesa, Ariz.
Arizona Sewage and Water Works Association. Annual Meeting (Maricopa Inn). Exec. Sec., Harry S. Jordan, State Health Dept., State Office Bldg., Phoenix, Ariz.

April 7-9—Fayetteville, Ark.
Arkansas Water and Sewage Works Conference. Annual Meeting (Engineering Hall, University of Arkansas). Exec. Sec., Harrison Hale, Southern State College, Magnolia, Ark. Locally contact Professor L. R. Heiple, Engineering Hall, Fayetteville, Ark.

April 10—Billings, Mont.
Montana Sewage and Industrial Wastes Association. Annual Meeting (Northern Hotel). Sec.-Treas., H. B. Foote, State Board of Health, Helena, Mont.

April 10-12—Clemens, S. C.
South Carolina Water and Sewage Works Association. Annual Meeting (Clemson College). Exec. Sec., W. J. Linton, Wade Hampton Bldg., Columbia, S. C.

***April 11-12—Billings, Mont.**
American Water Works Association—Montana Section. Annual Meeting (Northern Hotel). Sec., Arthur W. Clarkson, Asst. Director, Division of Sanitary Engineering, State Board of Health, Helena, Mont.

April 14-17—Lafayette, Ind.
Purdue Road School. Annual Meeting (Union Bldg., Purdue University). Exec. Sec., Ben H. Petty, C. E. Bldg., Purdue University, Lafayette.

April 16-18—Syracuse, N. Y.
American Water Works Association—New York Section. Spring Meeting (Hotel Syracuse). Sec., R. K. Blanchard, 30 West 50th St.,

***April 17-18—Lincoln, Nebr.**
American Water Works Association—Nebraska Section. Annual Meeting (Cornhusker Hotel). Sec., E. Bruce Meier, Asst. Professor, University of Nebraska, Lincoln, Nebr.

April 17-18—Washington, D. C.
Maryland-Delaware Water and Sewerage Association. Annual Meeting (Wardman Park Hotel). Sec.-Treas., W. McLean Bingley, 2411 N. Charles St., Baltimore 18, Md.

April 29-May 1—Seattle, Wash.
American Public Power Association. Annual Meeting (Olympic Hotel). Gen. Mgr., Alex Radin, 1757 K St., Washington 6, D. C.

May 3—Kansas City, Kans.
American Water Works Association—Kansas Section. Annual Business Meeting (Town House). Sec.-Treas., Harry W. Bradley, 640 Highland, Salina, Kans.

May 4-9—Kansas City, Mo.
American Water Works Association. Annual Conference (Municipal Auditorium). Sec., Harry E. Jordan, 521 Fifth Ave., New York 17, N. Y.

May 5-6—Washington, D. C.
National Housing Conference. Annual Meeting (Hotel Statler). Exec. Vice-Pres., Lee F. Johnson, 1025 Vermont Ave., NW., Washington, D. C.

***May 6—Kansas City, Mo.**
American Water Works Association—Kansas Section. Business Meeting-Luncheon (Hotel President). Sec., H. W. Badley, 640 Highland St., Salina, Kans.

May 7-9—West Lafayette, Ind.
Industrial Waste Utilization Conference. Annual Meeting (Purdue Memorial Union). Exec. Sec., Don E. Bloodgood, Department of Engineering, Purdue University, Lafayette, Ind.

May 15-17—Lewiston, Idaho
Idaho Municipal League. Annual Meeting (Lewis and Clark Hotel). Exec. Sec., R. W. Smith, Box 787, Weiser, Idaho.

May 15-17—New York, N. Y.
The United States Conference of Mayors. Twentieth Anniversary Conference (The Waldorf-Astoria). Exec. Dir., Paul V. Betters, 730 Jackson Pl. NW., Washington 6, D. C.

May 21-23—Dallas, Texas
National Institute of Municipal Clerks. Annual Meeting (Hotel Baker). Pres., Arthur J. Shinners, Town Hall, Brookline, Mass.

June 8-10—Bedford, Pa.
Pennsylvania State Association of Township Commissioners. Annual Meeting (Bedford Springs Hotel). Sec.-Treas., H. A. Fritschman, 2325 Darby Rd., Havertown, Pa.

June 8-11—Asheville, N. C.
National Association of Tax Administrators. Annual Meeting (Grove Park Inn). Exec. Sec., Charles F. Conlon, 1313 E. 60th St., Chicago 37, Ill.

***June 9-12—Cleveland, Ohio**
Air Pollution and Smoke Prevention Association of America. Annual Meeting (Hotel Statler). H. G. Dyktor, Commissioner, Division of Air Pollution Control, 1104 E. 9th St., Cleveland 14, Ohio.

June 9-13—New York, N. Y.
National Fire Protection Association. Annual Meeting (Hotel Statler). Gen. Mgr., Percy Bugbee, 60 Batterymarch St., Boston, Mass.

***June 15-18—Minneapolis, Minn.**
Association of State Planning and Development Agencies. Annual Conference (Nicollet Hotel). Exec. Dir., Walter H. Blucher, 1313 E. 60th St., Chicago 37, Ill.

***June 15-18—San Antonio, Texas**
National Association of County Officials. Annual Meeting (Plaza Hotel). Sec., Keith L. Seegmiller, 1616 Eye St. NW., Washington, D. C.

***June 15-19—Boston, Mass.**
Municipal Finance Officers' Association of the United States and Canada. Annual Conference (Statler Hotel). Exec. Dir., Joseph F. Clark, 1313 E. 60th St., Chicago 37, Ill.

***June 23-27—New York, N. Y.**
American Society for Testing Materials. 50th Anniversary Meeting (Hotels New Yorker and Statler). Asst. Sec., Robert J. Painter, American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa.

***June 24-27—New York, N. Y.**
The American Institute of Architects. Annual Convention (Waldorf-Astoria Hotel). Exec. Dir., Edmund R. Purves, 1741 New York Ave. NW., Washington 6, D. C.

***July 28-30—Pittsburgh, Pa.**
Pennsylvania Chiefs of Police Association. Annual Meeting (William Penn Hotel). Exec. Dir., Samuel Siegle, 420 State Theatre Bldg., Harrisburg, Pa.

***June 30-July 2—Calgary, Alberta**
Canadian Federation of Mayors and Municipalities. Annual Conference (Palliser Hotel). Exec. Dir., George S. Mooney, Office M-17, Mount Royal Hotel, Montreal, Que.

***August 24-27—Los Angeles, Calif.**
American Public Works Association. Congress and Equipment Show. Exec. Dir., D. F. Herrick, 1313 E. 60th St., Chicago 37, Ill.

***Aug. 25-28—Boston, Mass.**
International Association of Fire Chiefs. Annual Meeting (Hotel Statler). Gen. Mgr., James E. Jagger, 22 E. 38th St., New York 16, N. Y.

***Aug. 27-29—State College, Pa.**
Pennsylvania Sewage and Industrial Wastes Association. Annual Meeting (Pennsylvania State College). Sec.-Treas., Bernard S. Bush, Kirby Health Center, Wilkes-Barre, Pa.

So You Think Your City Has Problems?

IN COMPARISON to some cities abroad, life for American municipal officials is relatively uncomplicated, however serious they think their problems are.

Note the following dispatch, date-lined Cologne, Germany, December 12:

"In another 16 years the last trace of damage done to this city, which was 98% destroyed in the last war, will have disappeared if the present rate of reconstruction and clearing rubble is maintained, city engineers say. There are now 17,400,000 cubic yards of debris which is being cleared up at the rate of 1,200,000 yards a year."

New Municipal Garage and Bandshell at Hollywood, Fla.

(See photographs on page 159)

By A. M. LITTLEFIELD, *Director Department of Publicity Hollywood, Fla.*

THIS mushrooming city of 20,000 people, located just 18 miles north of Miami, is justly proud of its two new recently dedicated municipal facilities—a $100,000 Bandshell and All-Wars Memorial and a $145,000 municipal garage—erected from surplus city funds built up over the last two years.

Both are dreams-come-true of City Manager A. P. McMann, who started to work for the city administration more than 20 years ago as a common laborer and progressed through every department to his present administrative position.

The city-garage idea was conceived by the City Manager when he was head of the street department, but lay dormant until he was named City Manager $2\frac{1}{2}$ years ago.

He made the first rough drawing and took it to the engineering department which perfected the plans. At the end of the first fiscal year there were funds for the start of work. More were added in the last budget. There was another surplus this year, and now the garage is built and completely paid for.

Saves Taxpayers' Money

In addition to stalls for each piece of the city's rolling equipment and the accompanying garage—with all modern equipment—the structure includes a police radio station and repair office; a stolen-property vault and storage room; parking-meter repair and storage facilities, and a completely equipped carpentry shop.

The City Manager believes that the garage will save the taxpayers an estimated $20,000 per year through increased efficiency, plus the fact that on rainy days workers previously sent home will be utilized in one of the various shops as helpers.

The new bandshell is another example of ingenuity. An antiquated shell was due for major repairs, but Mr. McMann explained the absurdity of spending more money on the old bandshell which was ready to give way after more than a quarter-century of use. He asked an architect to make a rough sketch of a new bandshell; the engineering department again figured up cost estimates; then back to the architect who completed his plans—all on a speculative basis.

Finally, the commissioners agreed to ask for bids, and the contract was awarded.

The bandshell and memorial as it stands today represents an investment of $160,000, including equipment, furnishings, and seating for 2,000.

Mayor of Hollywood is Lester C. Boggs. Commissioners include Earl Waltz, L. B. Slater, Al Ryll, and Ralph Thompson.

The Municipal Researcher's Ideal

THE LARGE PURPOSE of our kind of citizen-concern with government is to make democracy work; the purpose of citizen-concern with government is not to save taxes just because taxes are taxes, but because waste destroys the resources of democracy.

LENT D. UPSON

Impact Insurance Against
1—LOSS OF FIRE PROTECTION.
2—EXCAVATION AND PAVEMENT REPLACEMENT.
3—COSTLY REPAIRS INVOLVING MAJOR HYDRANT COMPONENTS.
4—FLOODING.
The Smith Protectop Hydrant is designed to permit rapid return to service at minimum cost when a Hydrant is damaged as a result of a traffic accident.
The Protectop Hydrant Standpipe and Valve Stem are equipped with Special Couplings located just above the ground. The Couplings withstand operating pressures and ordinary impact with an ample factor of safety. Under excessive impact occasioned by traffic accidents the Couplings fracture at the design points thus minimizing the damage and permitting speedy return to service at low cost.
All Smith Hydrants are equipped with Compression Type Valves which definitely eliminate flooding since the line pressure holds the Valve against its seat in the closed position.
Write for details.
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THE A.P. SMITH MFG. CO.
EAST ORANGE, NEW JERSEY

Municipal and Civic Publications

Public Health Relations—National, State, Local As Observed in Minnesota

INTERGOVERNMENTAL RELATIONS IN PUBLIC HEALTH—*By Lawrence Wyatt. The University of Minnesota Press, Minneapolis, Minn.* 1951. 221 *pp.* $3.50.

This is the fourth of a series of 10 monographs on various aspects of intergovernmental relations, edited by William Anderson and Edward W. Weidner. It is concerned mainly with the present—not with the historical development of intergovernmental relationships, and the primary aim has been to describe existing procedures and relations, not to evaluate them.

Sections on the United States Public Health Service cover its organization and legislation under which it operates; grants-in-aid and administration; other fiscal programs, and its relationship to the United States Children's Bureau. Other national agencies which deal in public health, such as the Food and Drug Administration, the Bureaus of Animal and Dairy Industry, are treated separately; and the last chapters of the book, dealing with state and local health departments, refer especially to Minnesota. The selected Bibliography at the end of the book should be very helpful to any student of this subject.

An Administrative Code For City Managers

DEFINING THE CITY MANAGER'S POSITION—*An administrative code on the functions, responsibilities, authority, and relationships of city managers; presented by L. L. Purkey, Manager, Department on Organization, Standard Oil Company of California (Standard Oil Bldg., San Francisco 20, Calif.).* 1951. 8 *pp. Copies available without charge upon request by municipal officers.*

A study undertaken at the request of the League of California Cities, and presented at the annual meeting of the City Manager Department of that association, October 1951. In the conduct of the study, the intent was to apply the accepted principles of industrial organization in the light of the practical experience of city managers in the State of California. The study group drew freely upon textbooks on municipal management and the publications of the National Municipal League (including the Model City Charter), the International City Managers' Association, and the League of California Cities.

In the Standard Oil Company of California an organization manual, or "management guide," has been developed over a period of almost 20 years. In presenting an application of this business manual to the position of city manager in the form of an administrative code, Mr. Purkey also suggested how this technique could prove useful in delineating the responsibilities and spheres of activity of the subordinates of the city manager.

Duties of Town Clerks and Treasurers in Connecticut

THE UNIVERSITY OF CONNECTICUT BULLETIN—HANDBOOK FOR CONNECTICUT TOWN CLERKS AND TOWN TREASURERS—*By Max R. White. December* 1951. 76 *pp. Institute of Public Service, University of Connecticut, Storrs, Conn.*

The purpose of this Handbook is to provide town clerks and town treasurers with a guide to the statutes which regulate their duties. The first eight chapters are devoted to the duties of town clerks—records and documents, elections, licenses, permits, vital statistics, etc.—and the ninth and final chapter concerns town treasurers. Experienced officials should find the Handbook useful as a ready reference to the General Statutes while newly elected officials will find it helpful in acquiring a working knowledge of their duties.

Roads, Streets, and Highways

PROCEEDINGS OF THE THIRD CALIFORNIA CONFERENCE OF STREET AND HIGHWAY PROBLEMS—*Institute of Transportation and Traffic Engineering, University of California, Berkeley, Calif.* 132 *pp.* $1.

Included in the volume are 34 papers on construction, maintenance, traffic, county, urban, and general road developments. Two papers deal in detail with important aspects of national defense. One deals with hydraulic principles in the design of both small and large structures.

Soil and Bituminous Tests

TRIAXIAL TESTING OF SOILS AND BITUMINOUS MIXTURES—*American Society of Testing Materials,* 1916 *Race St., Philadelphia* 3, *Pa.* 1951. 310 *pp.* $3.50.

A 13-paper symposium on the special tests of soils and asphalt mixtures under "triaxial loads." This refers to a cylindrical specimen receiving a load applied axially, and receiving supporting pressure against its sides by water, air, or other means. Since neither soil nor asphalt mixes have a yield point, such as is found in rigid materials, and since the material flows under pressure rather than ruptures, the evidence of stability that these tests uncover is of particular significance. The 13 papers bring out some of the current thinking on the subject.

Industrial Wastes

PROCEEDINGS OF SIXTH PURDUE INDUSTRIAL WASTE CONFERENCE—*Engineering Experiment Station Bulletin No. 76.* 506 *pp.* $1.25. *Address request to Dean A. A. Potter, Executive Bldg., Purdue University, Lafayette, Ind.*

This volume records the proceedings of the Purdue University Industrial Wastes Conference, a meeting that is gaining popularity each year to the extent that attendance at the meeting begins to approach that of many national technical associations.

Fluoridation for Dental Health

FLUORIDATION — *American Dental Association, 222 E. Superior St., Chicago, Ill.* 28 *pp. No charge.*

The dentists' viewpoint on the use of water supply to supply fluoride to the teeth is expressed in this simple handbook. The text gives its stamp of approval, but warns that it is not a cure-all.

Defense-Affected Communities, Please Note!

THE HAMPTON ROADS COMMUNITIES IN WORLD WAR II—*By The Hampton Roads-Peninsula War Studies Committee (College of William and Mary). University of North Carolina Press, Chapel Hill, N. C.* 1951. 352 *pp.* $6.

A short history of the geographic, social, and economic aspects of the pre-war Hampton Roads-Peninsula area sets the stage for a study of the impact of World War II on this port, ship building, and military center. The entire life of the cities and towns of the region was thrown out of balance by the tremendous war-time increase in population—much of which remained after the war. The objective of the study was to establish a permanent record of the effects of World War II on the area, to give assistance in understanding and meeting the problems which evolved and to develop a long-range plan toward improved conditions. The study should aid other communities which are now faced with similar over-population problems. Overcrowded living conditions, abnormal family and social relationships, strains on the economy and facilities of the community require drastic and intelligent action by local governments.

Sewage Treatment Requirements

NORTH ATLANTIC DRAINAGE BASINS—*Federal Security Agency, Public Health Service, Washington* 25, *D. C.* 137 *pp. Free.*

Municipalities in the area that the Public Health Service designates as the North Atlantic Drainage Basins will have to spend a billion dollars to bring water pollution under proper control, this report estimates. The area involves the States of Delaware, Maryland, Massachusetts, New Jersey, New York, Pennsylvania, Vermont, Virginia, West Virginia, and the District of Columbia.

It designates 724 municipal and 360 industrial locations requiring corrective treatment. The area embraces 103,000 square miles and about 30,000,000 people. The report was prepared under the authority of the Water Pollution Control Act of 1948.

Kansas City Expressways

EXPRESSWAYS, GREATER KANSAS CITY—*Prepared by City Plan Commission, City Hall, 15th Floor, Kansas City 6, Mo. March* 1951. 172 *pp. Illus.* $6.

This is an engineering report for the Missouri State Highway Department and the Department of Commerce, Bureau of Public Roads. It represents the combined thinking and cooperative works of all city, state, and federal highway planning agencies in the area, and culminates the efforts of the Greater Kansas City Interregional Highway Committee, originally formed in 1943. The report is one of the best, in terms of organization, presentation, and analysis of the highway problem that has come to the attention of THE AMERICAN CITY.

The aims of the report, stated in the introduction, are to indicate to the people of Greater Kansas City the need for a complete and interrelated system of expressways; show the costs involved; gain support for the program; and provide a guide for establishing priorities of construction which might well form the basis for the designation of the federal-aid system and the allocation of federal-aid urban funds. The report includes a considerable amount of material, such as its definitions and explanations of traffic forecasts and analysis, construction costs, economic benefits, etc., which should be useful in other cities.

Sociological Analysis of Delinquent Youth

SOCIAL TREATMENT IN PROBATION AND DELINQUENCY—*By Pauline V. Young. Published by the McGraw-Hill Book Company, Inc., 330 W. 42nd St., New York* 18, *N. Y. New Second Edition.* 1952. 562 *pp.* $7.

The second edition of this treatise and casebook for court workers, probation officers, and other child welfare workers brings up to date and, to a large extent, rewrites the 1937 edition. This is a frank examination, based on selected case data, into the social problems of American youth and into the inadequacies of modern urban community life which contribute to the disorganization of youth. The work of the juvenile court, probation department, juvenile police bureau, both in their legal and social aspects, is analyzed, and detailed discussion of tested techniques and social processes is included.

As Dr. Roscoe Pound says in his Foreword to the Second Edition, Dr. Young "has given us a book useful for students, for social workers, and for judges, but particularly valuable for sociologists, for students of politics, and for lawyers who wish to know where we stand in the prevention of crime and in developing a better all-around coming generation in the crowded metropolitan areas of the great American cities of today."

A Catalog of Community Activities

WHAT SOME COMMUNITIES HAVE DONE FOR THEMSELVES—*By Community Adult Education of the Extension Service and School of Education, University of Michigan* (4205 *University High School, Ann Arbor, Mich.*) 1951. 32 *pp. Single copies free to readers of* THE AMERICAN CITY.

This booklet, with a foreword by Howard Y. McClusky, is the most comprehensive brief catalog and check list yet to appear of local community activities. Under six main heads—Community Cooperation, Community Service, Adult Education, Recreation, Youth, and Surveys—there are a total of 89 subheads, each followed by a succinct descriptive paragraph. Under "Surveys," for example, the subheads are:

Community Self-Survey
Activity-Preference Questionnaire
Community Needs and Interests Questionnaire
Inventory of Community Resources
Inventory of Public Functions and Facilities
Survey of Recreation Needs and Facilities
Adult Education Survey
Housing Survey
Survey of Community Leadership

The booklet will offer many helpful suggestions for activities to community councils and other local civic groups.

A Critique of Town Planning

PARALIPOMENA IN TOWN PLANNING—*By Paul Kriesis. Printed by G. S. Christou & Son, 7, Gambeta Str., Athens, Greece.* 1951. 32 *pp.*

This highly critical and elaborately documented discussion of current town planning principles and practices reaches the conclusion that "the time of preparing plans reveling in ideal facilities and amenities has passed, that plans must be fully justified by actual economic and political conditions and deal to such an extent and for such a period as can be reasonably foreseen."

"This," says the author, "will confine the free unlimited planning to a more disciplined program giving it some chance for implementation. That no ideal plans are required but *ideal possible* ones may sound obvious but it is amazing how conveniently this is forgotten."

Mr. Kriesis argues that "esthetic considerations in Town Planning which is based on a rational philosophy of Life are, if not completely irrelevant, at least always secondary to health and convenience."

And he answers with a categoric "*No*" the question of whether the "neighborhood idea" provides "the necessary environment for the development of the individual's mature personality."

Law for Engineers and Architects

ARCHITECTURAL AND ENGINEERING LAW—*By Bernard Tomson. Reinhold Publishing Corporation, 330 West 42nd St., New York 18, N. Y.* 1951. 424 *pp.* $7.

Besides containing a terse, to-the-point text, this book cites 1,300 cases that have come before the courts involving architects and engineers in one way or another. The book is designed to fill a long-felt need among members of the architectural, engineering, and law professions. Contractors, sub-contractors, builders, suppliers, and their individual and collective clients (including municipalities) will find the book useful.

The author has for three years written a column in *Progressive Architecture*, "It's The Law," and has also lectured extensively before many professional groups. The book is divided into seven major parts: 1. License laws for the architect, engineer, surveyor, and general contractor; 2. Relations among architects and engineers; 3. Architect, engineer, and owner—the employment relationship; 4. The decision or certificate of the architect or engineer; 5. Rights of architects and engineers: compensation; 6. Liability of architect or engineer to owner; 7. Rights of the architect and engineer—property in plans.

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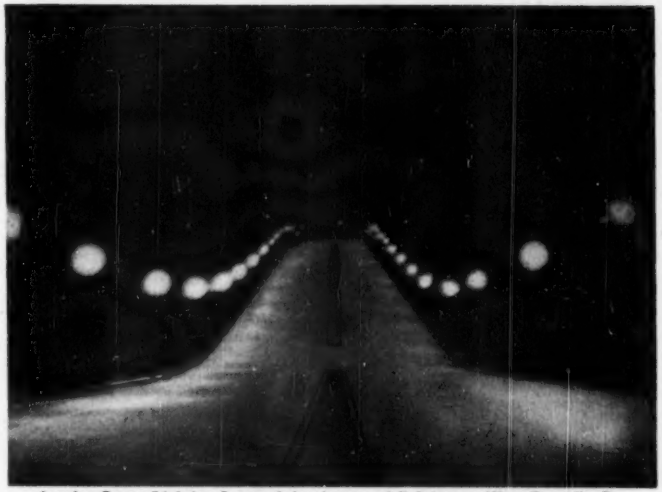

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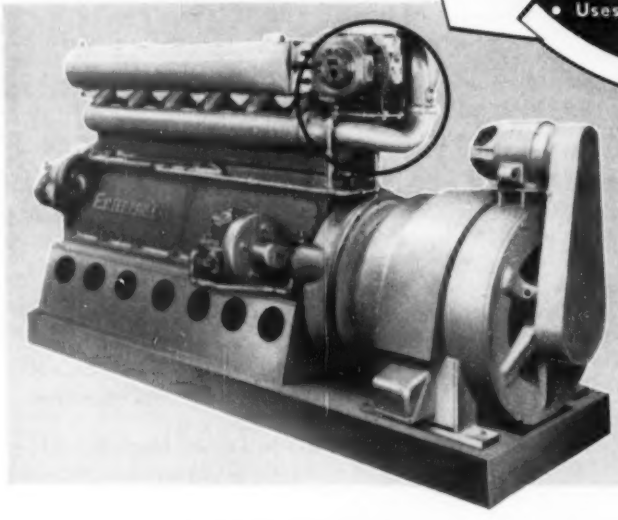

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Property Assessing Manual

STANDARDS FOR ASSESSING REAL PROPERTY—*Public Administration Service, 1313 East 60th St., Chicago 37, Ill.* 1951. 60 *pp.* $2.50.

This excellent report was prepared by Public Administration Service for and in cooperation with The Scientific Classification and Assessment Project, Department of Finance of Puerto Rico.

The volume was designed so that it may be of use not only to the officials and employees responsible for administering the real property assessment system of Puerto Rico, but also to those engaged in similar activities in other jurisdictions, and to those whose interest in the field of property assessment and tax administration leads them to inquire into the processes used and the principles of equalization involved. The book will be supplemented by a description of specific procedures, to be published later, which together with the present volume, will constitute an assessment manual for Puerto Rico.

The report has four major sections: Real Property Taxation; The Valuation of Urban Land; The Valuation of Rural Land; and The Valuation of Improvements.

State Tax Study

MAJOR STATE TAXES 1939 AND 1950—*Project Note No. 29 of the Tax Foundation, Inc., 30 Rockefeller Plaza, New York 20, N. Y.* 1951. 28 *pp.*

Concerned mainly with the role of the sales tax in the search by Congress for new sources of tax revenue, this study analyzes the major state tax yields and rates during the past decade. Seven major state taxes have been selected for study—the four main excise taxes (general sales, alcoholic beverage, tobacco, and motor fuel), the income taxes (corporate and individual) and the motor vehicle tax. Receipts from these taxes constituted 70 per cent of all state tax collections, excluding unemployment compensation taxes, in 1939, and 77 per cent of the 1950 total. The comparative figures for 1939 and 1950 are given in 19 Tables.

No. 1 Health Problem

SOMETHING CAN BE DONE ABOUT CHRONIC ILLNESS—*By Herbert Yahraes. Public Affairs Pamphlet No. 176. Public Affairs Committee, Inc., 22 East 38th St., New York 16, N. Y.* 1951. 32 *pp.* 25c.

This program for dealing with America's No. 1 health problem—chronic disease—stresses prevention or avoidance of the disease, by frequent medical check-ups and mass screening methods. The advances that have been made in ameliorating or postponing the effects of chronic disease have, the pamphlet states, far outstripped any progress in preventing the disease from developing. The author recommends "central services" activities in order to survey the problem, refer disabled persons to the institutions best able to serve them, work to expand facilities for the chronically ill, and in general stimulate community interest in the problem. The pamphlet includes a check list for interested citizens, recommended reading, and advice on where to obtain additional information.

Racine Public Library

RACINE PUBLIC LIBRARY STAFF MANUAL—Public *Library, Racine, Wis.* 1951. 53 *pp.* $2.

The manual has been produced for the new employee, as an authoritative source of information and instruction, and as a medium of coordination of regulations regarding library use. The first two parts of the handbook cover the history, administration, and organization of the Racine Public Library. Part III, covering operating procedures, describes the methods used in lending; registration; reference and reading guidance; selection, ordering, and withdrawal of circulating and reference material, and processing and cataloging.

It is believed that many librarians will find in this manual helpful hints for improving their own operating procedures.

California Government—City and County

LOCAL GOVERNMENT IN CALIFORNIA—*By John C. Bollens and Stanley Scott. University of California Press, Berkeley and Los Angeles.* 1951. 154 *pp.* $3.

Undertaken as a phase of the research program of the Bureau of Public Administration of the University of California, this study examines the variations of local organizational structure (county as well as city), and of administrative responsibilities, along with the related import of home rule. The local duties performed, their relative importance in terms of cost, and the sources of supporting revenue are outlined. Problems of providing services for unincorporated areas and of coordinating administration in metropolitan regions are considered. Although the tables and the bibliography will be especially valuable to students of California local government, the material generally is presented in such a way as to facilitate comparisons with local government systems in other states.

Expected Industrial Development in Ketchikan

PROBLEMS AND OPPORTUNITIES FACING KETCHIKAN—*A report by Ralph Browne for The Alaska Development Board and the City of Ketchikan.* 1951. *Mimeo.* 27 *pp.*

The announcement of plans for construction of the first pulp mill to locate in Alaska sparked this study of the City of Ketchikan. Prior to the arrival of this basic industry, the city's economy has been based on the "seasonal" fishing industry. The expected new industrial prosperity will be accompanied by substantial population increases and a severe strain on community services and facilities. Housing needs, utility, community service, school, social, transportation, business and civic finance problems are analyzed, and recommendations for future development made.

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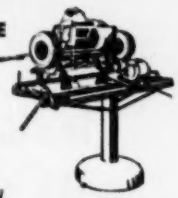

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County Executive Government

GUIDE TO COUNTY EXECUTIVE FORM OF GOVERNMENT, FAIRFAX COUNTY, VIRGINIA—*Special Report prepared by Bureau of Public Administration of the University of Virginia, submitted to the Fairfax County Board of Supervisors by the Chairman of the Research Project.* 262 *pp.* 1951. *Copies from Board of Supervisors, Fairfax Court House. Send* 8 *cents for postage.*

A research into the questions arising in connection with the change-over to the County Executive form of government. The report begins with a Summary and Check List designed to aid the board of county supervisors and the county executive in affecting the transition and in recording their progress in solving the problems which face them. Each item in the check list is cross-referenced to the body of the report. The main portion of the report gives the legal basis of the county executive form of government, and then treats separately the questions of duties, personnel, qualifications, structural organization, etc., of the Board of County Supervisors and the County Executive, the Department of Finance, Education, Law Enforcement, Planning and Zoning, Public Welfare, Health, Public Works, Courts and Records, and the Department of Farm and Home Demonstration. This study should be valuable to any county government changing or considering a change to the County Executive form.

Progress in Tokyo

TOKYO, A CONCISE HANDBOOK—*Compiled by the Archives and Documents Section, General Affairs Bureau, Metropolis of Tokyo, Japan.* 1951. 70 *pp.*

Numerous interesting pictures illustrate this account of various activities carried on by the Metropolis of Tokyo during the fiscal year 1950-51. The history, population, area, form of government, outline of the reconstruction plan, and other data are given in the early chapters—which are followed by chapters on progress in education, social welfare, labor administration, health and sanitation, commerce and industry, construction work, water supply and drainage, transportation, and public safety.

Ossining, N. Y., Parking Study

TRAFFIC AND PARKING PLAN FOR BUSINESS CENTER OF OSSINING, N. Y.—*By the Traffic Engineering and Safety Department of the Automobile Club of New York,* 28 *E. 78th St., New York* 31, *N. Y.* 1951. *Mimeo. Map.* 48 *pp.*

This plan with its recommendations for traffic and parking relief has been prepared as part of a sustained advisory service on traffic and community planning problems provided by the Automobile Club of New York. Liberally illustrated with maps and tables throughout the text, the study ends with 22 specific recommendations for regulation of parking, installation of meters, additional traffic signs, enforcement of restrictions, revision of local zoning ordinance to require adequate off-street parking space in new buildings, development of new parking lots, issuance of bonds to finance the plan, etc.

Mississippi Municipal Salaries

MUNICIPAL COMPENSATION—*Municipal Advisory Technical Series No.* 1—*Bureau of Public Administration, University of Mississippi, University, Miss.* 1951. 12 *pp.*

Ten tables summarize the information obtained, by questionnaire, from various Mississippi municipalities. Although salaries paid Mississippi officials in the larger towns and cities compare favorably with those paid in other states, the salaries generally are not indicative of the duties of the office, the time spent on the work or the responsibilities assumed, and they generally are not high enough to attract new well-trained personnel.

Recreation Centers

COMMUNITY RECREATION NEWS and A COMPLETE COMMUNITY CLUB IS POSSIBLE IN EVERY TOWN—*Published by The Brunswick-Balke-Collender Company of Canada, Ltd.,* 38 *Hanna Ave., Toronto, Ont.* 1951. *Former* 19 *pp., latter* 4 *pp.*

Two brochures designed to show ways in which community facilities for clubs and halls can be installed and improved.

The first pamphlet reports on developments in community recreation in Canada, giving plans and pictures of interior and outdoor facilities, such as parks, rinks, bowling alleys, billiard rooms, entire community centers, and telling how some of these facilities have been sponsored and financed in various Canadian communities and industrial plants. The second, a message of encouragement to towns planning community clubs, gives blueprints and story of the Mount Airy, N. C., sports center.

Planning and Housing Reports

BALTIMORE, MD.—Community Needs in a Residential Campus for the Johns Hopkins Medical Center. Metropolitan Research, 345 St. Paul Place, Baltimore 2, Md. Mimeo. Illus.

DETROIT, MICH.—Final 1950 Census of Population Detroit Region. Detroit Metropolitan Area Regional Planning Commission, 1002 Cadillac Square Bldg., Detroit 26, Mich. Nov. 1951. Mimeo.

MEMPHIS, TENN.—Here Are the Facts! 1950-1951 Annual Report of the Memphis Housing Authority, 264 North Lauderdale, Memphis, Tenn. Illus. 32 pp.

MOBILE, ALA.—A Preliminary Report on Urban Redevelopment for Mobile, Ala. Redevelopment Agency—Mobile Housing Board. Illus. 74 pp.

NEW YORK, N. Y.—Here Is Manhattanville, A

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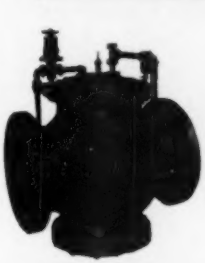

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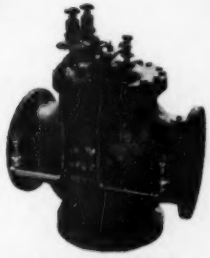

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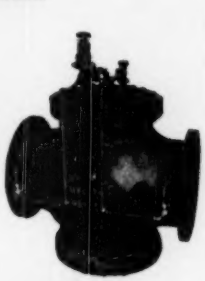

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Report to the People from the Community Advisory Committee Morningside-Manhattanville Redevelopment, Manhattanville Neighborhood Center, 514 W. 126th St., New York 27, N. Y. 12 pp.

PITTSBURGH, PA.—The City Planning Commission's Consolidated Report for the Years 1947-1950. For the Department of City Planning, 919 City-County Bldg., Pittsburgh 19, Pa. Maps. 25 pp.

UNITED STATES—Reservations of Capital Grant Funds, December 31, 1951. Housing and Home Finance Agency, Office of the Administrator, Division of Slum Clearance and Urban Redevelopment, Washington 25, D. C.

—News and Trends in City Development. Published by the Urban Land Institute, 1737 K St., NW., Washington 6, D. C. Vol. 10, No. 10 Nov. 1951.

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BUFFALO, N. Y.—Annual Report of the City of Buffalo for the Fiscal Year Ended June 30, 1951. Edward A. Neider, Comptroller, Department of Audit and Control. 137 pp.

CAPETOWN, U. S. A.—City Engineering in Africa's Southern Gateway. A review of activities of the City Engineer's Department, Capetown, by S. S. Morris, City Engineer. July 1951. Mimeo. 27 pp.

CINCINNATI, OHIO—Official Tax Rates (in mills) As Applied to the Taxpayers of Cincinnati for the Years 1926 to 1951 Inclusive. Cincinnati Bureau of Governmental Research, Inc., 812 Race St., Cincinnati 2, Ohio. December 1951.

CLEVELAND, OHIO—Annual Report to the People, 1951-1952. City of Cleveland, Legislative Department, Cleveland 14, Ohio. Illus. 48 pp.

CONNECTICUT—Questions and Answers on Social Security for Employees of Connecticut Town and County Governments. Prepared by the Institute of Public Service, University of Connecticut, Storrs, Conn. Informational Bulletin No. 7. Dec. 1951. 6 pp.

DETROIT, MICH.—Annual Report by the Auditor General of the City of Detroit, Mich., for the Fiscal Year Ended June 30, 1951. Office of the Auditor General, 1006 Water Board Bldg. 127 pp.

GEORGIA—Annual Report on Georgia Water Pollution Control in 1951. State of Georgia Department of Public Health, Atlanta, Ga. Jan. 1952. Mimeo. 22 pp.

GROSSE POINTE PARK, MICH.—Municipal Report, 1950-1951. Everett B. Lane, City Manager. Illus. 32 pp.

KANSAS—1951 Kansas Tax Rate Book. Reprinted from the January 1952 issue of the *Kansas Government Journal*, monthly publication of the League of Kansas Municipalities, 512 Capitol Federal Bldg., Topeka, Kans. Illus. 57 pp.

NEW YORK, N. Y.—Annual Report of the Department of Traffic, June 30, 1951. City of New York Department of Traffic, 100 Gold St., New York 38, N. Y. 30 pp.

—Future Water Sources of the City of New York. Report of Engineering Panel on Water Supply to Mayor's Committee on Mangement Survey of the City of New York, July 1951. 81 pp.

PASADENA, CALIF.—Annual Report of the Pasadena Water Department, 1950-1951.

PHOENIX, ARIZ.—Phoenix—A City of Planned Progress. A statement by Ray W. Wilson, City Manager. October 27, 1951. Mimeo. 13 pp.

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WISCONSIN—Absentee Voting by Wisconsin Servicemen. League of Wisconsin Municipalities, 30 E. Johnson St., Madison, Wis. 18 pp. $1.

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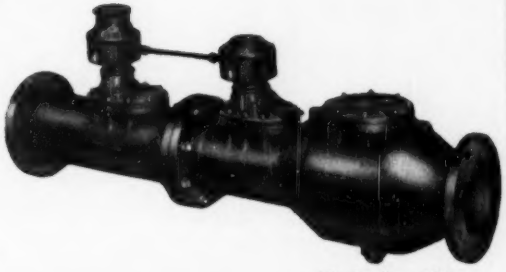

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Philadelphia Gets Mobile Communications Center

CUSTOM-BUILT to specifications of the city's Electrical Bureau, a three-ton mobile communications unit, housed in a 23-foot by 8-foot truck, has been accepted by Philadelphia city officials from the Radio Corporation of America for use in civil-defense and other emergency work. The unit can be used to direct all work from a safe place if all other communications are wrecked or temporarily disrupted.

It is equipped for two-way communications with all police cars and fire units, and also with police headquarters and fire-base stations. It will transmit and receive on one Civilian Air Patrol frequency which will reach planes overhead. It will receive and transmit on three different channels reserved for the "hams," both in mobile and stationary units. On another frequency band, the center will be able to reach commercial radio and TV stations.

The unit is bomb-proof, insulated, air-conditioned, and has a heating unit and black-out curtains. It has a 10-kw single-phase generator for emergency power supply, a 70-watt public-address system with directional horns, four floodlights, a flashing red-light system, and sirens. The truck also carries 150 feet of 26-pair reel-mounted telephone cable, and 16 phones are set up in it. Four sets of antenna can be raised from the roof, including a collapsible 35-foot unit.

All available space is used for storage bins to carry spares, walkie-talkies, and other necessary gear. The operating room, in the forward end, provides space for the driver, radio-command officer, and six or more radio operators.

AMONG WATER WORKS MEN...

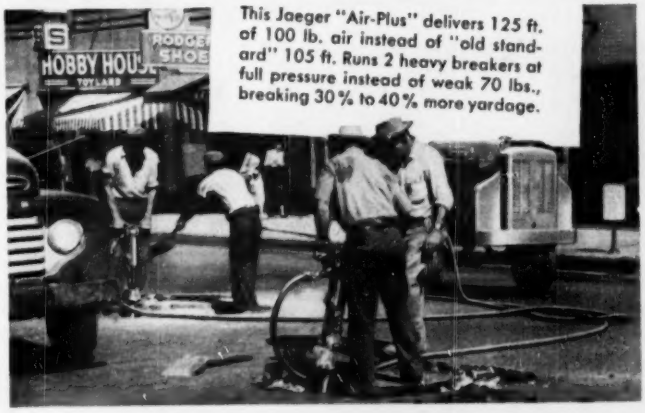
THE
ELLIS PIPE CUTTER
is *Best*
FOR CUTTING LARGE SIZES OF PIPE

No. 01 Cuts Pipe 4" to 8" | No. 1 Cuts Pipe 4" to 12"

Write for circular and price list No. 34AC on our complete line of pipe cutting tools.

ELLIS & FORD MFG. CO.
FERNDALE 20, MICH.

You Can Do 4 Days' Work in 3 with "New Standard" Jaeger Compressors



This Jaeger "Air-Plus" delivers 125 ft. of 100 lb. air instead of "old standard" 105 ft. Runs 2 heavy breakers at full pressure instead of weak 70 lbs., breaking 30% to 40% more yardage.

75 ft.
125 ft.
185 ft.
250 ft.
365 ft.
600 ft.

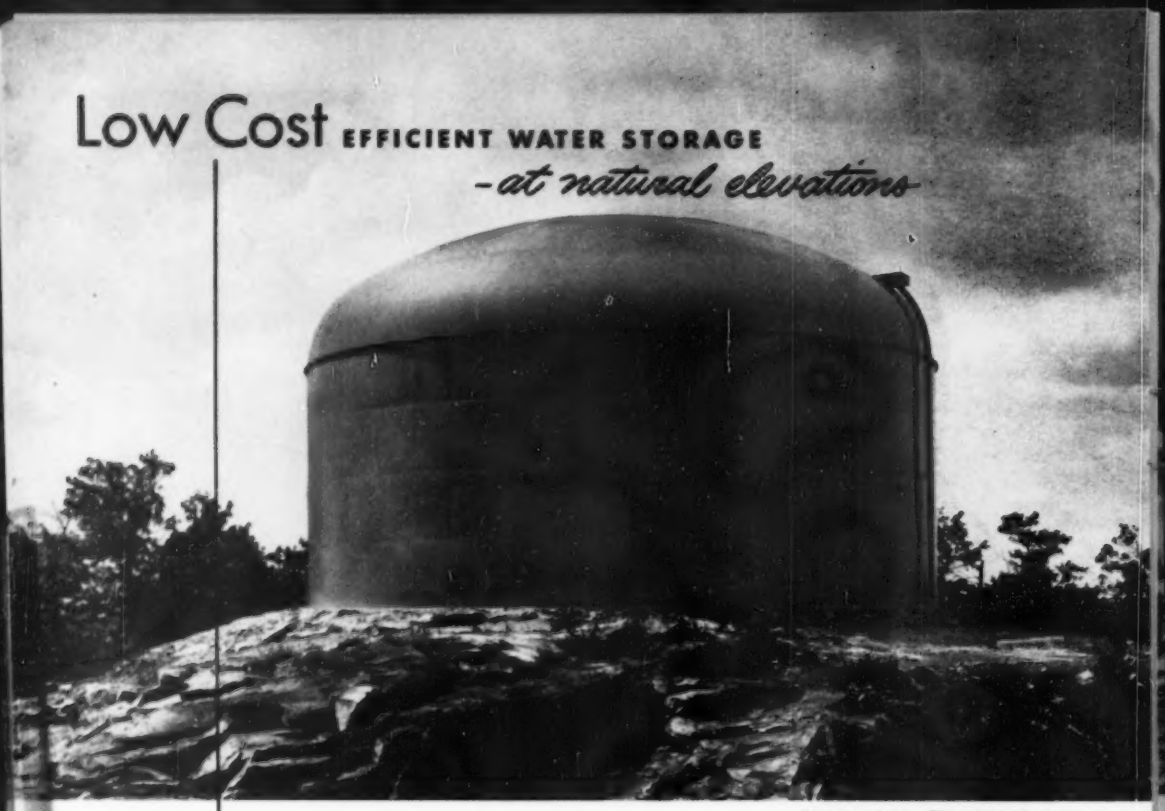
30% to 40% increases in production are yours with any "new standard" Jaeger from Model 75 that holds full pressure in a heavy pavement breaker up to Model 600 that runs 2 heavy wagon drills at full pressure with air to spare for hand-held drills. Jaeger Compressors deliver this 15% to 25% extra air at lowest cost per cubic foot of air of any compressor.

See your Jaeger distributor or write for Catalog JC-1.

THE JAEGER MACHINE COMPANY 505 Dublin Avenue Columbus 15, Ohio

PUMPS • MIXERS • HOISTS • TRUCK MIXERS • PAVING SPREADERS and FINISHERS

Low Cost EFFICIENT WATER STORAGE *-at natural elevations*



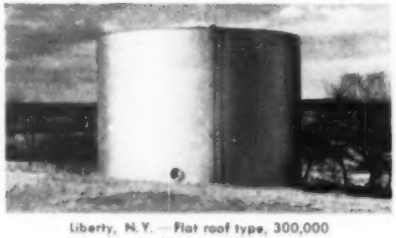
Worcester, Mass.—Ellipsoidal roof type, 1,500,000 gallons capacity.

* Steel Reservoirs

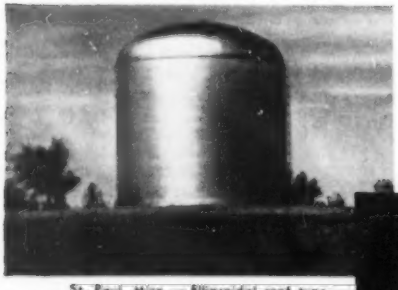
by **PITTSBURGH • DES MOINES**

The advantages of strength, simplicity, and economy of construction make Pittsburgh-Des Moines Steel Reservoirs your outstanding choice for water storage where elevated sites are available.

Durable for a lifetime, guaranteed in design, workmanship and material, P-DM Steel Reservoirs are built in flat-, dome-, or ellipsoidal-roof types, unornamented, or with pilasters and other architectural features as specified. *Write for our latest descriptive Steel Reservoir Bulletin.*



Liberty, N. Y.—Flat roof type, 300,000 gallons capacity.



St. Paul, Minn.—Ellipsoidal roof type, 2,000,000 gallons capacity.

PITTSBURGH • DES MOINES STEEL CO.

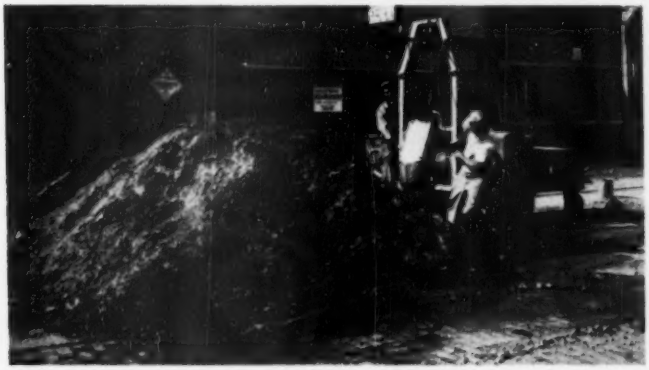
Plants at PITTSBURGH, DES MOINES and SANTA CLARA

Sales Offices at:

PITTSBURGH (25)	3412 Neville Island	DES MOINES (8)	913 Tuttle Street
NEWARK (2)	215 Industrial Office Bldg.	DALLAS (1)	1217 Praetorian Bldg.
CHICAGO (3)	1216 First National Bank Bldg.	SEATTLE	520 Lane Street
SANTA CLARA, CAL.	619 Alviso Road		

Municipal Purchasing News

Information for officials interested in equipment and services for the construction, operation, and maintenance of municipal utilities



This sewer-cleaning job looks more like an earth-moving project, but it was typical of what faced Kansas City at floodtime.

How Kansas City's Flood-Filled Sewers Were Cleaned

As dawn came to Kansas City on Friday, the 13th of July, 1951, the busy Kansas River had swollen all out of normal proportion. Warehouses in the Central Industrial District had been swept away; pumping stations were in danger of flooding out; the dike had broken in Argentine and Armourdale. As people saw the livestock marooned on the levees where the rivers crashed through in the early morning hours, they began to understand the enormity of this disaster, the greatest in Kansas City's history.

The Central Industrial District was paralyzed. Livestock had been turned out of the stockyards, and then swept down the river, many of them drowning. The cattle that were left were herded out across the receding waters and into the trucks that would haul them to other markets.

Clogged sewers were everywhere in the flood districts. The underground sanitary traffic had had to be scarified to make way for surface activity. Yet, before a single householder in the Armourdale district, for example, could return to what was left of his home and make a new start there, his house had to have a working sewer.

As the reality of this situation became clear to the city officials, its urgency likewise was apparent. But the size of the job was almost beyond measurement. This was no undertaking for limited equipment, handled by casual help, particularly when every available man in the cities was at work on reconstruction.

Into the emergency stepped a young organization. This outfit, known as Ace Pipe Cleaning Contractors, Inc., 2003 Indiana St., Kansas City 1, Missouri, realizing what was ahead in the flooded areas, put before the city fathers of the two Kansas cities a plan to meet the sewer situation. To back up this plan, they also presented an imposing array of power-operated sewer-main cleaning machines and a small army of well-trained men, adequate to attack the problem at once over a large area and work seven days a week, night and day. Sewer-main cleaning machines, by the way, are expensive to buy, and, right now, usually hard to get. But Ace had them, and later was commended by the Corps of Engineers, U. S. Army, as follows: "Our flood rehabilitation activities were successful because of your exceptional organizational ability in placing sufficient equipment and manpower at our immediate disposal."

The two city governments put Ace to work immediately. Operating out of their mobile trailer office—so their superintendents could be right on location—Ace trucks, machines and crews fanned out over the Bottoms, the Central and Woodswether industrial districts and Armourdale, and bent to the task.

First, rod crews took the field, driving a turning auger from manhole to manhole to break through the packed sewers. Then the bucket machines moved up, their powerful engines see-sawing the heavy steel buckets back and forth underground, lifting out rocks, hunks of broken curbing, bricks, roots, wire, shoes, and even old, sewer-cleaning rods of an early day, from the manholes. It was a hard 24-hour job.

What goes down must come up, to twist an adage familiar to all sewer cleaners. In the weeks since the flood, thousands and thousands of tons of silt and debris have been hauled out of the cities' sewers and off to be dumped. Private industrial sewers in the Central district, also stopped up by the flood, have been cleaned by Ace crews under contract with the respective managements. Where required, new manholes have been constructed to shorten the run between sewers.

Sewer-cleaning is hazardous, with its danger of sewer and many other unexplainable gases, mud-slick manhole ladders and the powered operations. Yet, in all its experience, Ace has never lost a man, and seldom an hour's work, in the carrying out of its contracts.

John H. Smith, president of Ace, went into business nine years ago with a residential electric sewer cleaning service in Kansas City, Mo. Ace today is a national service organization, with representatives in several principal cities and the facilities to do either a sewer or water main cleaning job anywhere, anytime.

In an interview, Mr. Smith commented on his experiences.

"Ace was in the sewer-main cleaning business long before we knew the flood was going to hit the Kansas Cities," Smith explained, "but that disaster showed how vital to the life of a city sewer-main cleaning can be.

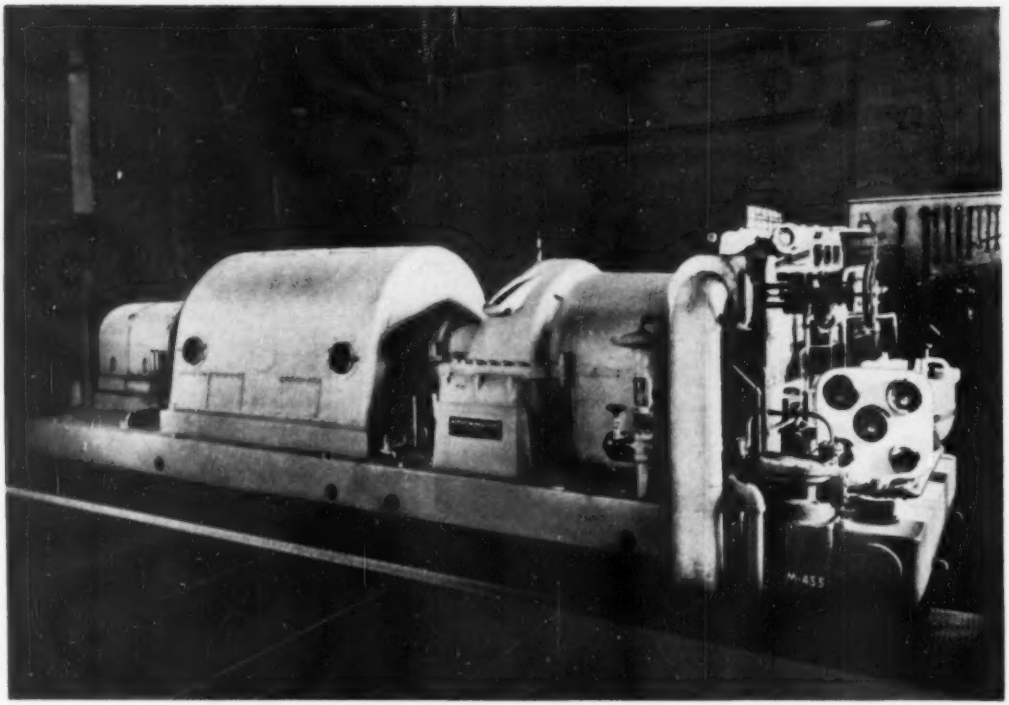
"For one thing, there was the emergency angle. Those flood-clogged sewers had to be re-opened as a highly important part of the general reconstruction problem, and fast. Think of the capacity of those old sewer lines, some only 30 per cent efficient, for generating deadly explosive sewer gas, and of the serious sanitary problem of the city in that accumulation of waste without a periodic clean-out. And just as important to the welfare of a city are properly pressurized water lines, which are the result of clean water mains.

"We knew there must be many cities that, through lack of equipment and trained men, have been unable to clear out these underground pipe systems, water and sewer. Thus, in anticipation of serving them, we happened to be ready when the call for help came from our own home cities, the Kansas Cities of Missouri and Kansas."

Huber Co. Appoints Albany, N. Y., Distributor

The Huber Manufacturing Co., Marion, Ohio, announces the appointment of R. B. Wing & Son Corp., as distributor of its street maintenance equipment in the Albany area of New York. The firm's office is located at 384 Broadway in Albany.

Wing & Son will handle the sale of Huber graders, tandem, and 3-wheel rollers, and the 42½-hp. Huber maintainer—light grader known as "Nine Maintenance Machines in One."



Power Planning—for the Years Ahead

Worthington Turbine Generators for Two Harbors Power Plant

This is how the City of Two Harbors, Minnesota met expanding power and light requirements and found the answer to economical power plant operation.

In 1948 the city installed a Worthington 2500-kw turbine generator. This machine operates in parallel with other units already installed in the power plant.

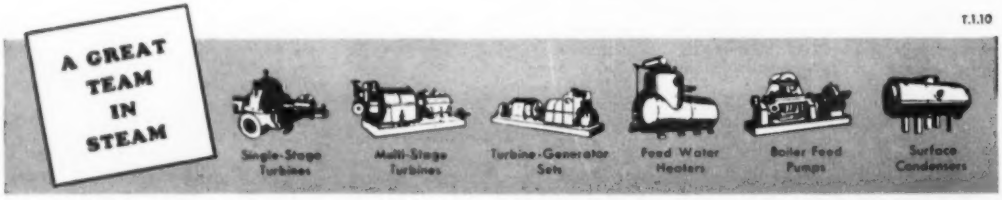
As the electrical demand grew, a survey showed that another power-producing unit was needed. Again, a Worthington turbine generator was selected. The new 3500-kw Worthington unit, to be installed next year, will supplement the existing power plant equipment. With this latest addition, the City of Two Harbors will be fully equipped to handle all its power and light needs for many years to come.

Worthington builds steam turbines in all types and sizes—and turbine-generator sets up to 10,000 kw. For proof *there's more worth in Worthington*, call our nearest office or write to Worthington Pump and Machinery Corporation, Steam Turbine Division, Wellsville, New York.

WORTHINGTON

STEAM TURBINE GENERATORS

T.1.10



Heads Joslyn Sales

E. R. McCoy has been appointed sales manager of the Joslyn Manufacturing and Supply Co., 20 North Wacker Drive, Chicago 6, Ill. He has been with the sales department for 18 years. Mr. McCoy succeeds M. M. Kenneally, who will serve as sales consultant to the company.

E. R. McCoy

This year Joslyn observes its 50th anniversary as manufacturer of complete line equipment for the transmission and distribution of electrical power. The concern was organized in Chicago by M. L. Joslyn in 1902.

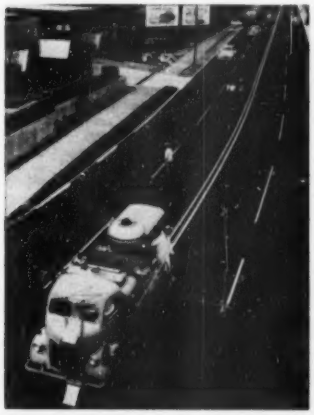
Mr. Kenneally joined Joslyn in 1944, prior to which he was with the Iowa Public Service Co., Ohio Brass Co., and Porcelain Insulator Co.

Traffic Striper

This multi-purpose traffic striper doesn't have to be put away when the traffic lanes are all neatly painted. It can be used for paint spraying, for roadside weed control, for mosquito control, for painting bridges, guard rails and buildings, and for operating air tools, such as a paving breaker, according to General Traffic Controls, Inc., P.O. Box 1373, Tacoma, Wash.

The machine represents the ultimate in traffic-striping flexibility. It can produce two-color combinations, any combination of skip stripe up to four lines at a time; it is equipped for wet or dry reflective coatings, and does not require any part to come in contact with the road surface except the truck tires.

A new bulletin has been issued on this traffic striper by General Traffic Controls, Inc., Tacoma, Wash.



Four stripes at a time, in two colors, either solid or skip stripe, can be applied by this marker.

Rusk County Highway Dept., Ladysmith, Wisconsin, keeps this 7-yd. D Tournapull busy the year 'round. During the dirtmoving season, it works on road construction jobs. In winter, equipped with a LeTourneau 9′ V-Plow (as illustrated) it speeds county-wide snow removal. Here's a report from County Highway Commissioner Harold Iverson on its cold weather operation:

2 to 3 times as many driveways cleared

"We use our D Tournapull mostly for plowing out farm driveways," Iverson says. "Clearing and widening the average 200 to 250′ driveway takes less than 3 minutes with this rig, as compared to 10 to 15 minutes with a 10-ton, all-wheel-drive truck and even longer with a motor patrol. I'd say we clear at least 2 to 3 times as many driveways in a day with our 'D' as we do with a truck.

"For example, one day right after a heavy storm, the 'D' plowed out 56 driveways over 30 miles of country roads. A truck would have cleared 15, maybe 20.

Maneuverability speeds work

"The biggest advantage of the D Tournapull is its maneuverability. You can turn it around with its own length. You can't get stuck! With a truck you have to line up your wheels very carefully before starting to plow a driveway so you don't fall into a culvert . . . with a Tournapull, you just turn on the run and drive ahead. Tournapull operator also has a clear view of the plow blade which speeds his work considerably."

When your county or city purchases modern LeTourneau earth-moving and snow removal equipment, you can be sure you are getting most for your money in speed and economy. These high-speed, rubber-tired units drive to work anywhere, eliminate transportation costs and delays, get jobs done in a hurry with minimum use of muscles and manpower. They pay dividends to the taxpayers in better year-around maintenance of highways and other public works facilities.

Reduce Refuse Collection Costs

With The All Purpose Unit . . .

Ashes . . . Rubbish . . . Garbage . . . In fact any type of refuse . . .

The ROTO-PAC takes them all in its stride.

Speed in loading and adaptability in taking any type of refuse plus high compaction and low operating costs — These things add up to greater savings.

Here's where the savings start . . . Automatic continuous loading and packing . . . Crushes boxes and crates . . . Its low loading height eliminates back strain and other occupational hazards . . . It works on a low operating oil pressure thus cutting down wear and tear on the engine.

You can see why the ROTO-PAC can take it easier, work faster and last longer, without breakdown, than other refuse equipment . . . why users of ROTO-PAC say that their absence rate has dwindled down to almost nothing since the ROTO-PAC was placed on their route . . . Why ROTO-PAC operates economically to save you money.

CHECK THESE ROTO-PAC FEATURES!!

Automatic Continuous Loading
Greater Compaction
Lowest Loading Height
Automatic Continuous Packing
Lowest Operating Pressure
Continuous Ash Loader
Doubles As Snow Hauling Vehicle
Lower Cost Operation

ROTO-PAC

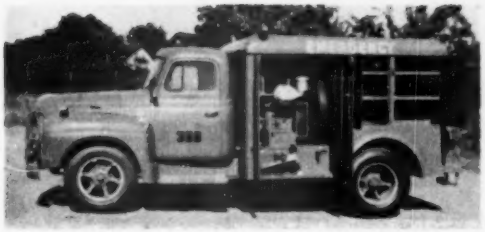
by

CITY TANK CORPORATION

MANUFACTURERS OF

Roto-Pac — Street Flushers — Gasoline and Fuel Oil Truck Tanks — Trailers and Semi-Trailers — All Types of Fluid Carriers

CITY TANK CORPORATION, 53-09 97th PLACE, CORONA 68, L. I., N. Y.



This truck has a wide variety of repair and service equipment.

Manhattan Purchases New Field Service Unit

The Borough of Manhattan, N. Y., has just added a Davey field service unit to its extensive equipment fleet.

Built by the Davey Compressor Co. of Kent, Ohio, the truck includes a wide variety of repair and service equipment. Main items are a Model 105 Davey Auto-Air compressor and 300 ampere, 8 kw, 110 volt combination welding and power generator. These are operated directly from the truck engine through a Davey heavy-duty power take-off which eliminates the need for two separate driving engines.

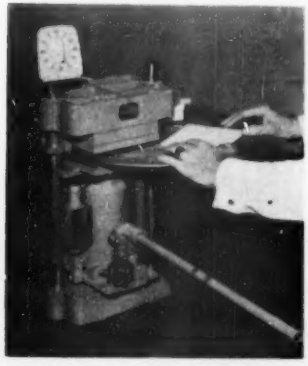
Other equipment includes a complete assortment of air and electric tools, oxygen and acetylene welding equipment, and floodlights.

Permanent Plastic Protection Of Identification Passes

Permanent plastic protection of identification passes, photos, and other material is now possible within the price and personnel range of the average company, according to Harco Industries, Rochester, N. Y. The company offers a new laminating press which can be set up in any office and operated by regular office personnel.

The manufacturer states that complete lamination of material up to 5 inches by 6 inches can be accomplished in 45 seconds, with multiple production reducing time to 22 seconds or less per wallet-size unit. Hydraulic pressure of 4,500 pounds plus temperature of 400° F. causes plastic laminating stock to impregnate card or photo, thus preventing lamination from splitting or pealing off. Moisture-proof and tamper-proof, plastic lamination protects records, photos, identification cards, and the like from curling, aging, or other deterioration resulting from everyday use.

Easy to operate, the new Harco lamination press requires no clamps or accessories, and is ready to begin operation as soon as it is installed. Lamination is available in clear plastic or colors for instant department or area identification.



New lamination press, for office use, which requires no clamps or accessories.

Would You Like Free Literature?

A *Complete Listing* for all your needs starts on page 23 of this issue.

Garden Park Swimming Pool, Milwaukee, Wisconsin, painted with Phelan's Hydroflex.

Paint Your Pool with Rubber!

Phelan's HYDROFLEX Rubber-Base Finish Gives Beauty and Low-Cost Upkeep

Elasticity and durability are built into this special rubber-base finish. It stands up and keeps its beautiful color under tropical sun or winter frost. Easy to clean because slimy algae can't cling to its satiny tile surface.

Pool owners from coast to coast get two season's wear from Phelan's Hydroflex—investigate now!

FREE! Folder showing COLOR SAMPLES and full information. Write

PHELAN-FAUST PAINT MFG. COMPANY

St. Louis 11, Mo. Since 1902

Phelan's HYDROFLEX Swimming Pool Finish

RUBBER BASE

YOUR BEST BUY

NEW PATHFINDER PIPE LOCATOR

- ★ POWERFUL PRECISION UNIT
- ★ ECONOMICALLY PRICED
- ★ LIBERAL TRADE-IN PLAN
- ★ BRILLIANT SAFETY PAINT
- ★ LIFE TIME GUARANTEE

Only PATHFINDER offers all vital features you want . . . combined in one handy, compact unit. Quickly, accurately it locates position and depth of pipes, tees, valves, buried tools. The liberal trade-in plan gives you an added opportunity to save. Get the facts and you'll buy PATHFINDER!

Write! State model and year of locator to be traded.

PATHFINDER COMPANY

1726 Beverly Drive ★ Pasadena 7, California

Use "GUNITE," For durability and economy

FOR REPAIRING: Reservoirs, Dams, Filter Plants, Sewage Disposal Plants, Tanks, Stadiums, Bridges, Sea Walls, Breakwaters.

FOR LINING: Reservoirs, Swimming Pools, Tunnels, Sewers, Pipe, Concrete, Brick and Steel Tanks, Stacks, Bunkers, Irrigation Ditches

FOR CONSTRUCTING: Prestressed Tanks, Stacks, Piles, Side Walls and Roofs, Steel Encasements.

The proper maintenance and repair of structures is more important now than ever before.

Write for 48-page illustrated booklet showing "GUNITE" at work.

Nationwide operation Experienced Personnel

PRESSURE CONCRETE COMPANY

NEWARK 5, N. J. 193 Emmet Street

CHARLOTTE, N. C. Liberty Life Bldg.

CHICAGO, ILL. 33 No. La Salle Street

FLORENCE, ALA., South Court Street

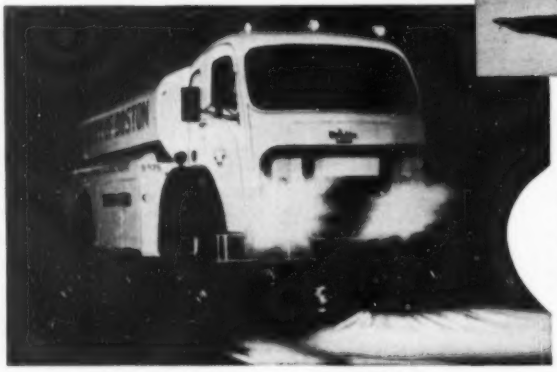
For Better Street Maintenance . . .
MODERNIZE with WHITE 3000

NEW STANDARD of efficiency in road and street maintenance is made possible by this entirely *new* kind of truck. It is engineered for savings of time . . . for most economical operation in such specialized services as construction and repair, oiling, flushing, cleaning and snow removal.

The White 3000 permits extra capacity bodies . . . does more work, in less time and at lower cost. Ask your White Representative for facts.

STREET REPAIRS
Shorter wheelbase and new weight distribution make the White 3000 more maneuverable . . . permits extra payloads. Roomy 3-man cab.

OILING
Covers more territory because it saves time at every turn and permits extra capacity tanker.



FLUSHING
For street flushing, surface treatment and catch basin and sewer cleaning, the White 3000 saves time and costs . . . first day in service.

Tips its cab to service

THE WHITE MOTOR COMPANY
Cleveland 1, Ohio

For more than 50 years the greatest name in trucks

Represents Roebling In the Midwest

Donald C. Hansen has been named district representative for Ohio, Michigan, and Western New York State, Woven Wire Fabrics Division of the John A. Roebling's Sons Co., Trenton 2, N. J. The announcement was made by Samuel K. Hornor, manager of sales, from the division's main plant at Roebling, N. J.

D. C. Hansen

A resident of Oberlin, Ohio, Mr. Hansen was graduated from the University of Alabama.

Detects Radioactive Contamination of Public Water Supplies

The Ohmart Corp., 2347 Ferguson Road, Cincinnati 38, Ohio, announces the addition of the Model AH-1 Gammometer to its line of radiation measuring instruments. This instrument and the manufacturer's line of equipment are applied in scientific and laboratory work, in the following of chemical processes and liquid level measurement, and in the detection of radio-active contamination of public water supplies.

The AH-1 Gammometer utilizes the newly introduced Ohmart cell (in which radioactive energy is converted directly into electrical energy) as the radioactive element. The company reports that with the use of this cell, the need for a high voltage power supply is eliminated, and the result is an instrument unparalleled in its field for long-time precision, dependability, and simplicity of operation.

The Ohmart cell is so designed that samples are placed in a well within the cell, resulting in maximum precision—since the quantities of activity measured are much larger than when slides must be prepared, and since geometry errors are minimized. The advantage of direct readings also contributes to increased accuracy, as well as saving time.

The need for a high voltage power supply is eliminated with the use of the Ohmart cell featured in this radiation measuring instrument which is produced by the Ohmart Corp., Cincinnati 38, Ohio.

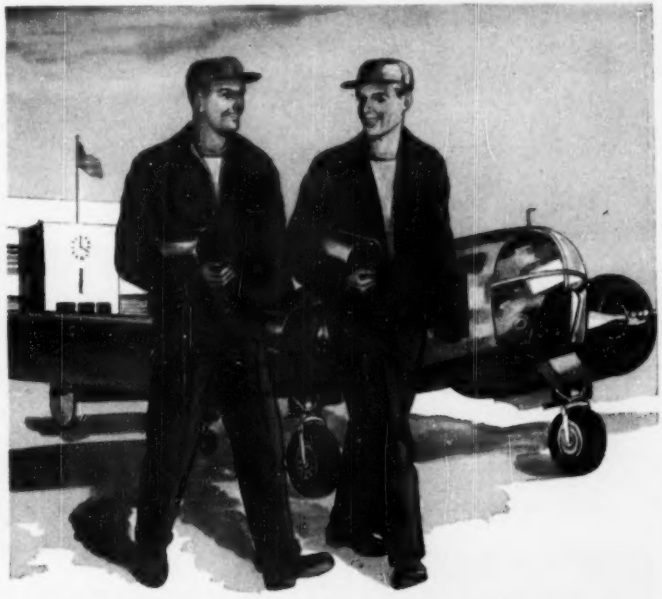
The line of Gammometers has ranges from as low as .1 microcurie to 10,000 microcuries full scale, calibrated in terms of radium (standard), iodine-131, or cobalt-60. For measurement of ambient field intensity, the units are available calibrated in milliroentgen per hour from .1 to 10,000 mr/hr. full scale.

A. W. Ross Becomes President of Layne-New York Co.

A. W. Ross is the new president of the Layne-New York Co., 92 Liberty St., New York, N. Y. He succeeds W. M. Lewis, district engineer, who remains a member of the executive board.

The company specializes in groundwater development and will supply wells and pumps through Layne and Bowler, Inc., Memphis 8, Tenn., as well as iron-removal and softening plants through the General Filter Co., Ames, Iowa. It operates in the region around New York State and has had particularly good success developing water supplies on Long Island.

Mr. Ross started with the company in 1922. Since then, he has seen the organization develop more than 2,000 water plants with a total pumpage of about 1,000 mgd.



These Men Saved $5,192.31 Today!

It is estimated that the cost of a ground survey on a large flood control project would have been over $3,000,000 and would have taken over 10 years. An Abrams Aerial Survey cut costs 90% — resulted in savings averaging over $5,000 a day. Time saved on the project was eight years.

Have Them Work for You... Whether your project is governmental or commercial, large or small, an Abrams Aerial Survey can save you time and money. Write for the new edition of our book, Aerial Surveys and Maps From Photographs.

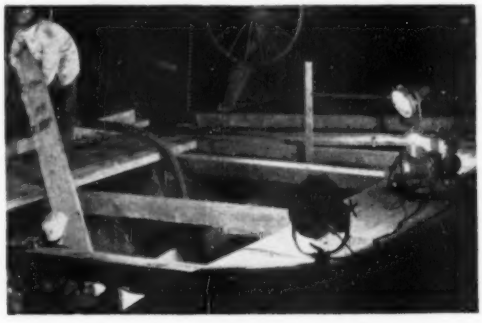
ABRAMS AERIAL SURVEY CORPORATION
LANSING MICHIGAN U.S.A.

Three HOMELITE UNITS

that Can Cut Your Costs This Year

Homelite Carryable Pumps. In less time . . . and with less labor . . . a Homelite Gasoline Engine Driven Pump will take care of your dewatering jobs. No transportation problems. No trouble getting it on the job. One man can carry it . . . put it in operation any place quickly and easily. Handles up to 15,000 gallons per hour. Fast self-priming. Keeps seepage at strainer level automatically. 28 ft. suction lift. Non-clogging. Really dependable at all times.

Homelite Carryable Generators. Night work used to be slow work . . . and expensive work . . . but not any more. With a lightweight, carryable Homelite Gasoline Engine Driven Generator you can have, in no time and with no trouble, all the brilliant floodlights you need to speed work and cut costs in emergency night repairs. What's more, using your Homelite Generator to operate new, efficient electric tools pays off plenty in important savings in time and labor at all times, night or day.



Homelite One Man Chain Saws. For clearing storm damage or new construction sites, nothing approaches the efficiency and man-hour savings offered by the new Homelite Gasoline Engine Driven Chain Saws. Only 27 pounds, complete with 4 horsepower engine, will cut wood easier, faster, and with less trouble or maintenance than any other saw. One man can handle it easily. In fact, with the Homelite Saw one man can do more cutting in fewer hours than you would ever expect.

Send today for complete information on all Homelite Carryable Cost Cutting Units

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MANUFACTURERS' LITERATURE

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THE AMERICAN CITY MAGAZINE

470 FOURTH AVENUE

Catalog Supply Dept. NEW YORK 16, N. Y.

Free Catalog Supply Service

For readers of THE AMERICAN CITY

When checking equipment in this issue of THE AMERICAN CITY, your attention is directed to these sections:

1. The catalog listings, to be found on pages 23, 25, 26, 29, 30 and 34. Each listing has a number. Write the numbers of the catalogs you wish to receive on the reply card below.

2. The "Municipal Purchasing News" section, pages 183 through 214, where descriptions and illustrations of equipment and services are to be found. If you need additional information on any of these, jot down on the card the name of the product and its manufacturer.

In addition, should there be equipment not mentioned in this issue about which you would like information—such as manufacturer's name, source of supply, etc.—make your inquiry on the card. We'll do the rest.

To THE AMERICAN CITY's Catalog Supply Department,

Please send literature on items numbered as follows, starting on page 23:

.....

.....

Please send me further information on the following products described in this issue:

.....

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I would like to receive also manufacturers' booklets on .....

.....

.....

NAME .....

TITLE .....

ADDRESS .....

..... 2-52

Fill in the attached card—tear off along dotted lines, and drop in mail-box.

Reflective Emblem In One Piece

Reflectorized police and fire emblems that are brightly visible at night can now be placed on raincoats and jackets in a single piece. The emblem is a single piece of Scotchlite brand reflective fabric on which only the letters (Police or Fire) are brightly reflective at night.

The background is "blacked out" with a special paint. The emblems can be either sewn or cemented to the garments, it was announced by the Minnesota Mining and Mfg. Co., 900 Fauquier Ave., St. Paul 6, Minn.

The manufacturer points out that the new emblem enables all letters to be painted on immediately, making the application faster and more permanent.

New Chemical Weed Killer Can Erase Dense Growth

A new non-selective chemical weed killer, which erases dense growths of mixed grasses and broad-leaf weeds, leaving only an expanse of bare soil, has been developed by the Research Department of E. I. DuPont de Nemours & Co., Inc., Wilmington, Del.

The compound is known as CMU, short for 3-(p-chlorophenyl)-1, 1-dimethyl-urea. Potential commercial uses include the prevention of growth of grass and weeds on railroad roadbeds and trestle locations, and around power sub-stations and manufacturing plant sites. DuPont reports that it also will eliminate growth which constitutes a fire hazard in lumber yards, around petroleum storage tanks, arsenals, and telephone and telegraph poles.

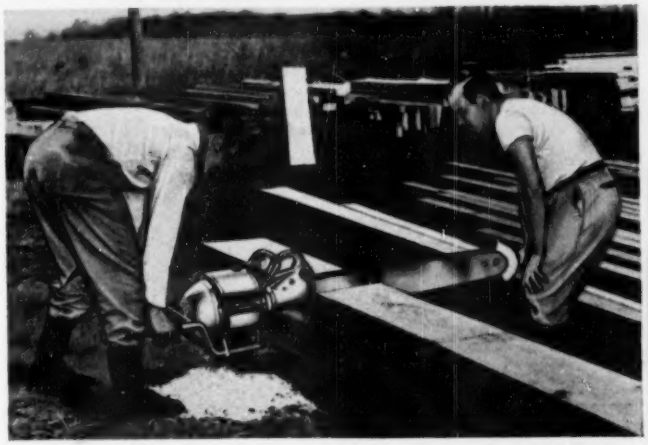
CMU is not flammable or corrosive. It is relatively non-volatile and has been applied as a spray, using a wettable powder dispersed in water. Laboratory tests have shown it to be safe so far as toxic effects on warm-blooded animals are concerned.

The compound appears to be absorbed into the root system of the plant, then moves upward into the foliage.

DuPont reports that so far, only small quantities of CMU have been produced for investigational work. During 1952, a limited amount of the new weed killer will be available for commercial use. It will be manufactured at the Cleveland, Ohio, plant of DuPont's Grasselli Chemicals Department.

New! LIGHTWEIGHT 9 HP DISSTON INTERMEDIATE CHAIN SAW

that handles any woodcutting job!



Here's the power chain saw you've been waiting for—the new 9 hp, 2 cylinder Disston Intermediate Chain Saw, the DA-211. Powerful enough to handle any woodcutting job—yet its balanced light weight makes it easy to heft. It will give you many years of satisfying, trouble-free cutting power.

ALL-AROUND TOOL! The Disston Intermediate is perfect for right-of-way and line clearance, cuts mine props and bridge timbers with ease, has hundreds of uses in shipyards and on railroads, as well as for general plant maintenance.

LABOR-SAVING? And how! Time-saving, too. The DA-211 can do in a few minutes the work of an hour's manual sawing.

HENRY DISSTON & SONS, INC.

Philadelphia 35, Pa., U.S.A.

In Canada, write: 2-20 Fraser Ave., Toronto 3, Ont.

LOOK AT THESE GREAT FEATURES....

2 cylinder, 9 hp Mercury gasoline engine • Perfect balance—no vibration • Automatic clutch • Automatic chain oiler • Dependable float-feed carburetor • Simplified, positive controls • Self-rewinding starter • Rugged magnesium castings • Available with "L" or "C" chain • 2' to 7' (incl.) new narrow-profile slotted rails • Transmission swivels to any position—can be easily removed

Henry Disston & Sons, Inc. (Adv. Dept.)
Philadelphia 35, Pa., U.S.A.

Please send me information on the 9 hp DA-211 Disston Intermediate Chain Saw.

Name_____

Street_____

City_____ State_____

11-B

It'll soon be 21!

For 20 straight years Internationals have been first in heavy-duty truck sales.

It will soon be 21. Another year will be added to International Trucks' heavy-duty leadership because truck operators who know hauling costs will *continue* to prefer the trucks that give them lower operating and maintenance costs, longer truck life.

If you are interested in these money-saving advantages, why not see your International Truck Dealer or Branch about the truck engineered for your job?

INTERNATIONAL HARVESTER COMPANY · CHICAGO

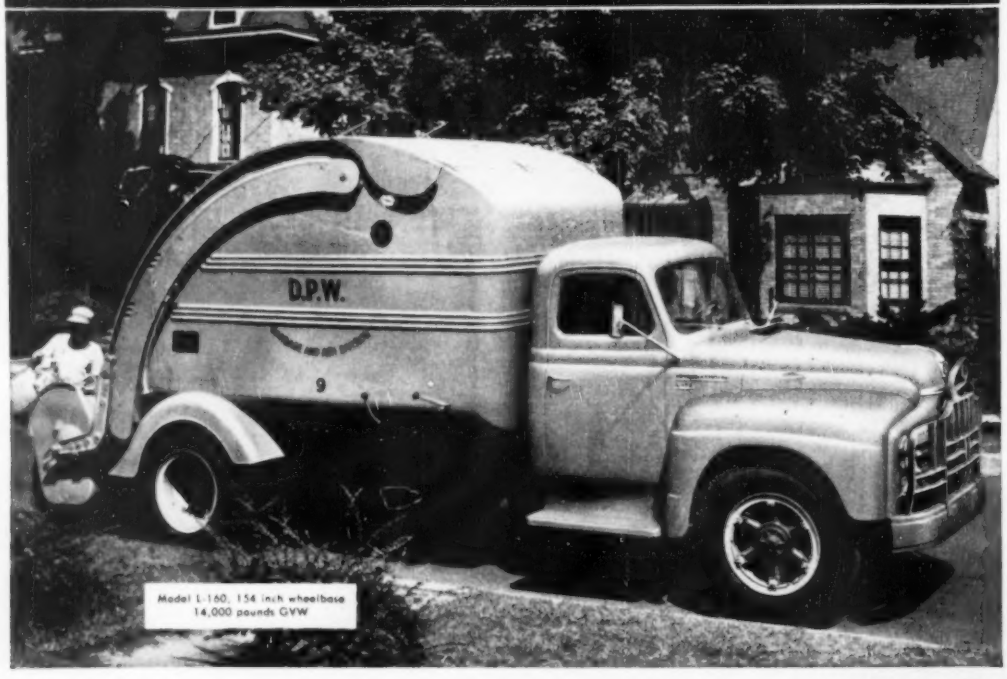
Check these exclusive advantages of Internationals:

- All-truck engines—exclusively for truck work—built in the world's largest truck engine plant.
- The "roomiest, most comfortable cab on the road"—the Comfo-Vision Cab designed by drivers for drivers.
- Super-steering system—more positive control, easier handling and 37° turning angle.
- Traditional truck toughness that has kept International first in heavy-duty truck sales for 20 straight years.
- 115 basic models . . . everything from ½-ton pickups to 90,000 lb. GVW ratings.
- America's largest exclusive truck service organization.

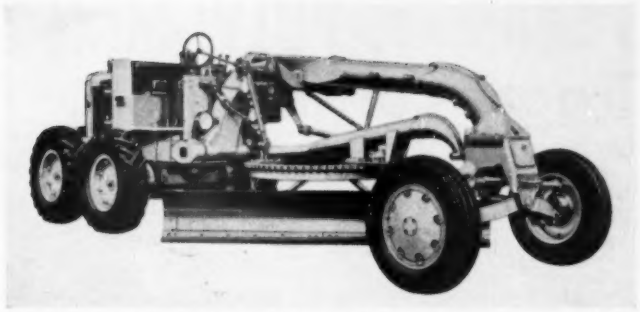
International Harvester Builds McCormick Farm Equipment and Farmall Tractors . . . Motor Trucks . . . Industrial Power . . . Refrigerators and Freezers

INTERNATIONAL TRUCKS

More than One Million Now on the Road



Model L-160, 154 inch wheelbase
14,000 pounds GVW



New motor grader, with its trouble-free hydraulic booster system completely enclosed in the main frame, which provides effortless steering, even in the toughest kinds of work.

Motor Graders for Tough Grading, Maintenance Jobs

Two completely new motor graders, Models AD-40 and AD-30, have been reported by the Tractor Division of the Allis-Chalmers Manufacturing Co., Milwaukee 1, Wis. These newly designed machines complete a line of five motor graders having a wide range of horsepower, weight, and speed.

The 4-cylinder, 2-cycle, diesel powered AD-40 weighs 23,000 pounds and develops 104 brake horsepower. The AD-30 is powered by a 3-cylinder, 2-cycle diesel engine, weighs 22,700 pounds, and develops 78 brake horsepower.

Allis-Chalmers states that the AD's will easily and quickly handle the toughest grading or maintenance jobs, and are engineered for high production on any operation. The General Motors 2-cycle diesel engine handles the heavy-duty power requirements of any job. Tandem drive offers full traction under any ground conditions.

New standards of operating ease incorporated into the AD motor graders include easier shifting, complete visibility, feather-touch hydraulically operated steering, and all-around operator comfort. According to the manufacturer, the Roll-Away mold-board, high axle clearances, and accurate blade control all combine to move bigger loads faster, produce precision cuts or smooth finishes on a wide variety of applications, construction, or maintenance.

Accessories and special equipment are available for the motor graders to increase their adaptability to meet a wider variety of specialized applications and conditions.

Precision-Lighting Catalog

Holophane's new catalog contains 90 product illustrations and 59 candlepower distribution curves, giving detailed information on 270 lighting units. One interesting unit is the wall-mounting refractolens for illuminating a horizontal surface from a vertical mounting position. Its field includes tunnels, underpasses, loading platforms, hangar aprons, swimming pools, playgrounds, parking lots, and the like.

Basic unit of this line takes a 200-watt medium base lamp. It may be mounted against a wall or recessed to a depth of $3\frac{1}{2}$ inches.

This catalog is an up-to-date reference book for the latest in lighting equipment for hospital and institutional as well as plant and outdoor areas. A combined engineering data book and catalog, this publication is available from the Holophane Co., Inc., 342 Madison Ave., New York 17, N. Y.

PUNCHES sheets and covers of any size or weight, quickly, accurately
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C. G. Braxmar Co., Inc.
216 E. 45th St., New York 17, N. Y.

Motor and 24" Gate Valve for Sale

RESOLUTION NO. C-2275

A RESOLUTION AUTHORIZING THE CITY PURCHASING AGENT TO ADVERTISE FOR SALE CERTAIN MUNICIPAL LIGHT PLANT EQUIPMENT NOT NEEDED FOR ANY MUNICIPAL PURPOSE.

WHEREAS, the following Municipal Light Plant equipment is not needed for any municipal purpose:

General Electric Induction Motor —vertical pump motor "Hollow Shaft Type" Model 12F340 Frame 6307 Type KF; Volts 220/440 FL Amps 110/55 3 Ph. Cycles 60 speed full load 875 40 H.P. Continuous 40° rise. Serial #5381366.

Crane Company 24" #793 1/2 low pressure gate valve equipped with Style "P" spur geared handwheel and a 4" bolted by-pass on side of valve.

NOW, THEREFORE, BE IT RESOLVED by the Commission of the City of Piqua, Miami County, Ohio, three-fourths of all members elected or appointed thereto concurring:

SEC. 1: That the City Purchasing Agent be, and he is hereby authorized and directed to advertise for sale, according to law, the above municipal light plant equipment.

SEC. 2: That this Resolution shall take effect and be in force from and after passage.

WILBUR F. RECK, MAYOR
City of Piqua, Ohio

Passed: 11-19-51

Attest: Joe Klasman
Clerk of Commission

Where the SEAMAN PULVI-MIXER Fits in Airport Construction!

Highway construction too, has many operations that are identical to airport development in which the SEAMAN PULVI-MIXER does the work faster, more efficiently and at a greater saving in costs. Unparalleled in daily output of completely mixed materials the SEAMAN successfully challenges the most extensive projects; low in investment, it is profitable on the smallest jobs. Plan on a SEAMAN in your 1952 operations.

The TRAV-L-PLANT Model of the SEAMAN PULVI-MIXER. Equipped with pump, spray bar and full tachometer assemblies for application of bitumen or water. Volumetric meter optional. 7 ft. mixing width. Gasoline or diesel powered.

SEAMAN MOTORS, Inc.

292 NORTH 25TH STREET, MILWAUKEE 3, WIS.

Send for this FREE book on up-to-the-minute practices in mixing for all types of stabilized construction. Write for Bulletin 25.

Waukesha Motor Co.'s Advertising Manager

The Waukesha Motor Co., Waukesha, Wis., has announced the appointment of Harry J. Lemmer as advertising manager. After serving for several years as Chicago passenger traffic representative for the Union Pacific Railroad and service in the passenger and promotion departments of the Illinois Central and Chicago Great Western Railroads, Mr. Lemmer joined the Waukesha Motor organization in 1942.

H. J. Lemmer

During the war he was technical information manager, supervising the publication of technical manuals ordered by the Armed Forces using Waukesha engines and power units. In 1946 he became assistant advertising manager.

The Waukesha Motor Co., established in 1906, manufactures industrial and heavy-duty truck type engines and power units, railway passenger car air conditioning and electric generating engine-driven equipment, and fuel-rating laboratory engines.

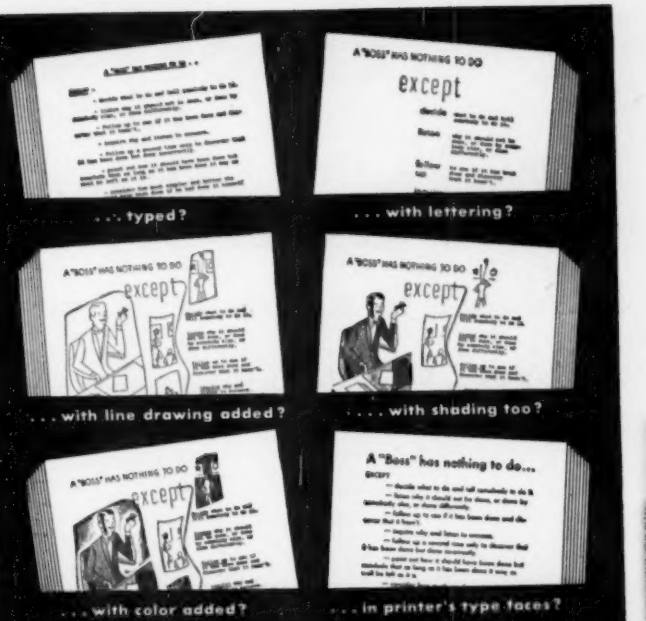
Dust, Ice-Control Machine Gives Uniform Spread

Engineers of The Dow Chemical Co., Midland, Mich., have completed the development of a spreader designed specifically for applying calcium chloride pellets and flakes to streets for dust-proofing and ice control. The machine will be produced by The Baughman Mfg. Co., 631 Shipman Road, Jerseyville, Ill.

According to Dow, an outstanding feature of the spreader is its uniformity of spread which is accomplished by driving the spreader roll through an easily installed linkage with the wheel of the truck. As the truck speed increases or decreases, the spreader roll goes faster or slower and delivers the same number of pounds of material per square yard. The spreader roll delivers calcium chloride to the street without undue force which would tend to scatter the material off the road.

A special feature is a two-speed, oil-sealed drive which should be especially useful in applying calcium chloride for ice control.

According to Dow engineers, the new spreader meets the following requirements: one-man operation, for safety and economy; uniform spread at all truck speeds, for speed of application and economy of materials; adaptability to any type of dump truck; lightweight for easy installation; rugged construction for long life and low maintenance costs, and simplicity for applicability to low-cost mass production methods of manufacture.


A "BOSS" HAS NOTHING TO DO except
. . . typed?
. . . with lettering?
. . . with line drawing added?
. . . with shading too?
. . . with color added?
A "Boss" has nothing to do...
. . . in printer's type faces?

How do you like your copies?

On many different kinds of paper and card stocks? In a variety of sizes ranging from 3" x 5" to 9" x 16"? Duplicated on both sides of the paper? In rich black or even several colors duplicated at one time?

Do you like your copies duplicated at speeds up to 180 a minute, with new ease of operation, and low over-all cost?

If you do, you'll want to know about MODERN mimeographing, the process that gives you "Balanced Duplicating." Send the coupon below for a free portfolio of samples. A. B. Dick mimeograph products are for use with all makes of suitable stencil duplicating products.

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Here's a great new Burroughs to speed your accounting

Never before have governmental units had the opportunity to mechanize their accounting at such moderate cost—because never before has there been a medium-priced machine so flexible and fast; so easy to operate, as the sensational new Burroughs Sensimatic.

This is the all-new, amazingly versatile figuring tool—the machine with a "mechanical brain" that directs it through every accounting job swiftly, easily, accurately. The Sensimatic makes possible the complete mechanization of all your record keeping work from a single machine.

Investigate now. Learn how the Sensimatic can save dollars, hours and effort . . . how surprisingly little it costs to own. Write for complete information today. Burroughs Adding Machine Company, Detroit 32, Michigan.

Handles all These Jobs
and more

- Budgetary Accounting
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It's the Sensational

Burroughs Sensimatic

accounting machine

WHEREVER THERE'S BUSINESS THERE'S **Burroughs**

Rockwell Sales Manager

L. A. Dixon, Jr., assistant vice-president of the Rockwell Manufacturing Co., 400 N. Lexington Ave., Pittsburgh 8, Pa., reports the appointment of Joseph F. O'Grady as sales manager of the company's Water Meter Division.

J. F. O'Grady

Mr. O'Grady succeeds G. H. Gleeson, who will remain with the concern in a consulting capacity.

Joining Rockwell in 1940 in the headquarters sales department, Mr. O'Grady became supervisor of sales for the Pittsburgh district in 1947. In his new assignment he will be responsible for coordinating the company's sales program by working with the regional sales managers and keeping close contact with the district offices throughout the country.

One-Man Saw Has New Fast-Cutting Chain

An improved one-man chain saw with a radically new fast-cutting chain is reported by Henry Disston and Sons, Inc., J-11 Tacony, Philadelphia 35, Pa. The manufacturer states that the DO-101 has a tougher, sturdier crank-shaft, rapid-action stop switch, new fan housing, and other advanced technical changes. The Kiekhafer 3.5-hp engine is still standard equipment.

Disston claims for the new "F" chain a smoother cutting action and increased lateral stability. On the improved DO-101 the "F" will ride around a number of new guide rail lengths, designed especially for the new chain. These will be in over-all lengths of 20, 26, 32, 36, and 40 inches.

Effective on all types of wood, the chain employs a comparatively small tooth with a lowered cutting edge, shorter pitch, and rounded guiding lug that accurately regulates the depth of the cut.

Just introduced is Disston's DO-101 one-man chain saw, which is being put through a field test by Disston Field Engineer Don Nielsen.

FIRE LOSSES DOWN DOWN DOWN!

WITH FULTON Shuredry ON THE JOB

Speed does it! Fulton Shuredy Salvage Covers are designed for fastest handling by your salvage crew. They are light, pliable and spread quickly and easily.

Pressure impregnated with the exclusive Fulton dry treatment, Shuredry Salvage Covers top every test for water penetration and seepage.

APPROVED by National Board of Fire Underwriters, and by Factory Mutual Laboratories.

You can depend on Shuredry to cut down fire losses! Specify FULTON SHUREDRY GREENBAK SALVAGE COVERS, from your fire equipment dealer.

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Winko-Matic alternate-flasher signal

attracts motorist's instant attention!

Self-contained, alternating flashers, visible more than a mile, command driver's obedience to the message, on your sign . . . day or night . . . in fog, snow, rain.

Best By Obedience Test

For complete details on activating your own signs, easy installation, minimum maintenance and low cost.

Write for Bulletin No. 101

Winko-Matic Signal Co.
750 Broadway Lorain, Ohio

In the MARCH issue

- the latest survey of the nation's incinerators and a discussion of how they are operating.
- the money-saving experiences of two California cities using new design principles in sewage treatment plant. Also article spelling out the benefits of "Modified Aeration" in sewage plants.
- some thought-provoking stories showing how two cities arrange street improvements and keep the public happy.
- a description of how one city embarked on a fluoridation program in its water supply, and how two others solved annoying water treatment and distribution problems.

The American City
470 4th Ave., New York 16, N. Y.

Please enter my subscription for one year beginning with the March issue.

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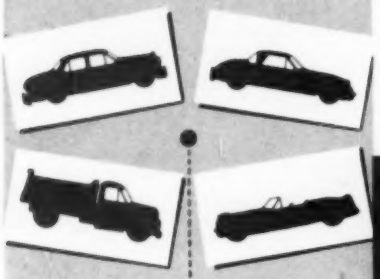
DIFFERENT NEEDS



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CINCINNATI 6, OHIO

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SUPERIOR
Supreme in strength, in resistance to damage and vandalism.

The Low Cost
HUSKY
Makes Karpark dependability available at a minimum investment.

The Versatile
TWIN-O-MATIC
One installation times two cars; has every wanted feature.

The "First Family" of Parking Meters

KARPARK

A METER FOR EVERY PARKING NEED

The Adaptable UNIMATIC
Takes care of any parking situation—beautifully and efficiently.

PLANNED PROTECTION FOR WATER SYSTEMS

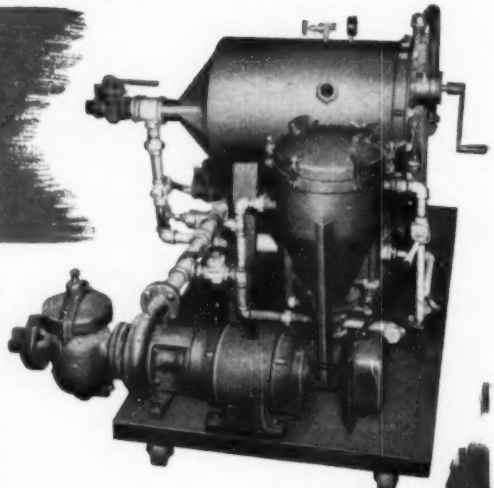
SPARKLER FILTERS

. . . Ideal for mobile applications

Contamination or failure of municipal water systems is probably the most serious threat to the survival of a community in the event of disaster. With Sparkler mobile filtration systems, however, every community is assured an adequate supply of safe, pure drinking water.

Sparkler Model SC diatomite filters are designed to filter large quantities of water quickly and effectively—at low cost. They are self-cleaning, and do not need to be broken down for either cleaning or inspection. The entire cleaning and pre-coating operation can be accomplished in 15-20 minutes so that the filter is hardly out of service.

Complete units, including filter, pump, slurry feeder, debris catcher, chlorinator, and gasoline engine can be furnished ready for mounting on truck or trailer bed. Filters are available with rated capacities ranging from 900 GPH to 72,000 GPH. These standard sizes, however, can deliver far greater quantities of water when necessary, although this is not recommended for general service. Write for literature.



Other units, designed for manual portability, may be supplied. Our Engineering Service is available for special design work or for modifications of standard models.

SPARKLER MANUFACTURING CO., Mondelein, Illinois

The new GMC 2½-ton diesel truck takes a grade with ease at the General Motors proving ground at Milford, Mich., as the driver puts its three-cylinder diesel engine through rigorous tests. Thousands of miles of travel over all kinds of terrain were put on the GMC D450-37 while it hauled, for test purposes only, 2½ tons of concrete blocks on its chassis. This is the smallest diesel truck yet offered in automotive history.

Three-Cylinder Diesel Truck Enters Medium-Weight Field

The GMC Truck and Coach Division of General Motors Corp., 660 South Boulevard, East, Pontiac 11, Mich., announces that a new GMC three-cylinder diesel truck has entered the medium-weight field. Another diesel "first" by GMC is the new GMC D450-37, a 2½-ton unit with five available wheelbases for either truck or highway tractor models.

Announcement of the new diesel truck was made by Roger M. Kyes, vice-president of General Motors and general manager of the GMC Truck and Coach Division, who said that the compact, 110-hp model would create new horizons for cost-conscious truckers operating in the 19,500-pound G.V.W.-35,000-pound, G.C.W. class.

A new feature in the GMC is an electrically operated shift control for the models with two-speed axles, and an air-actuated hydraulic brake system which combines air actuation with the advantages of dual-cylinder hydraulic brakes at front and rear.

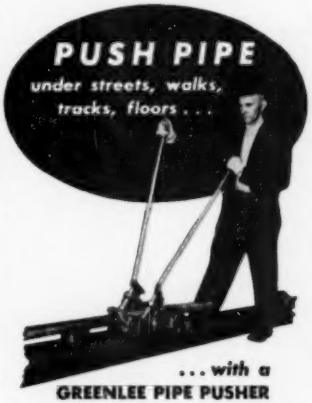
A maximum geared speed of 54.4 miles per hour, with 9:00/20-10 ply tires, offers the usual hustle of GMC diesels, while a total gear reduction of 46.9 provides the pulling power for any circumstance.

Some Advance Made in 1951

Among items of municipal interest in a comprehensive review of General Electric developments in 1951 was the large-scale production of a small power transformer that uses less steel and, because the flux flows with the grain, has minimum core loss and noise level. Another item was the lighting with fluorescent luminaires of the business district of Lyndonville, Vt. A third was a tone-receiving device which turns the normal radio party-line system into a private or sub-grouping system. Oberlin, Ohio, for instance, added tone-receiving devices to its FM receivers issued to all volunteer firemen, so that only calls preceded by the proper tone come through.

William Raisch Opens Engineering Office

William Raisch, consulting engineer, is opening his office in the Garden City Co. Building, Station Plaza, Garden City, L. I., N. Y.



Speed jobs with this quick, simple way to install underground pipe. With the GREENLEE *one man* pushes pipe under obstacles . . . no tearing up of pavement, floors, lawn . . . eliminates extensive ditching and tedious backfilling! Two models and special power pump to fit your various jobs. Write for facts today.

GREENLEE

Greenlee Tool Co., 2002 Columbia Ave., Rockford, Ill.

KILL INSECT PESTS with

IRON AGE

MIST SPRAYERS

Users everywhere praise the performance of Farquhar Iron Age Mist Sprayers on golf courses, parks, playgrounds, swimming pools, tourist courts, picnic grounds, and other places where insect pests are a problem.

Here are the outstanding features of the Farquhar Iron Age Model 125: 22 hp, 4 cylinder Wisconsin engine drives sturdy cast aluminum axial flow fan at 87% efficiency, delivering 6,000 to 11,000 cubic feet of air per minute at 90 to 125 mph. New, efficient spray jets meter *exactly* the right amount of mix, either oil or water, to center of high velocity air stream, insuring complete misting of concentrate. Spray jets can be changed quickly to alter droplet size. Turret rotates 360° for full control of air blast. 125 gallon tanks are available with trailer or skid mounting. Comfortable spring seat for operator.

Find out *now* how Farquhar Iron Age Mist Sprayers can make your pest control program *far more effective at less cost.*

Write A. B. FARQUHAR COMPANY, 2636 Duke St., York, Penna.

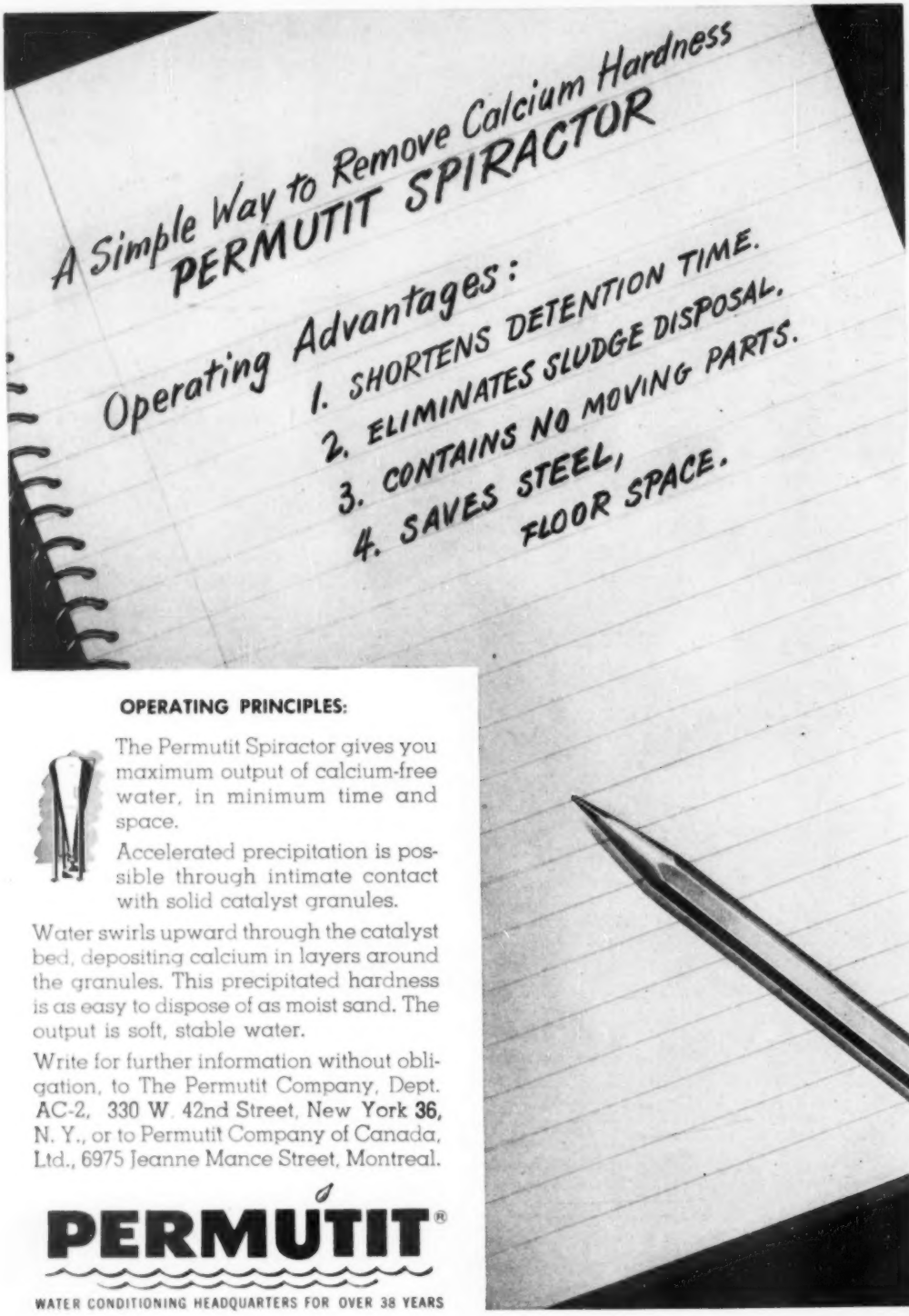
Farquhar

IRON AGE

YORK, PA.

POTATO AND VEGETABLE PLANTERS · TRANSPLANTERS · SPRAYERS · DUSTERS · POTATO DIGGERS · WEEDERS · MANURE SPREADERS · CONVEYORS · JUICE PRESSES

PLANT AND SPRAY THE IRON AGE WAY


A Simple Way to Remove Calcium Hardness
PERMUTIT SPIRACTOR
Operating Advantages:
1. SHORTENS DETENTION TIME.
2. ELIMINATES SLUDGE DISPOSAL.
3. CONTAINS NO MOVING PARTS.
4. SAVES STEEL, FLOOR SPACE.

OPERATING PRINCIPLES:

The Permutit Spiractor gives you maximum output of calcium-free water, in minimum time and space.

Accelerated precipitation is possible through intimate contact with solid catalyst granules.

Water swirls upward through the catalyst bed, depositing calcium in layers around the granules. This precipitated hardness is as easy to dispose of as moist sand. The output is soft, stable water.

Write for further information without obligation, to The Permutit Company, Dept. AC-2, 330 W. 42nd Street, New York **36**, N. Y., or to Permutit Company of Canada, Ltd., 6975 Jeanne Mance Street, Montreal.

PERMUTIT®

WATER CONDITIONING HEADQUARTERS FOR OVER 38 YEARS

Omega Machine President Moves to Providence

L. E. Harper, president of the Omega Machine Co., one of the B-I-F Industries, Providence, R. I., has moved from the Wilmette, Ill., office to Providence. He will direct the company's activities from the main office at 345 Harris Ave., and will reside in Barrington, R. I.

L. E. Harper

When Builders Iron Foundry purchased the Omega Machine Co. in 1944, Mr. Harper moved from Kansas City to Chicago to establish a Chicago-Midwest District office for the parent company and Omega Machine Co. For the past several years, this district office has been located in Wilmette, where Mr. Harper has been stationed. During his stay in the Midwest, he was active in the affairs of the Illinois Section of the American Water Works Association.

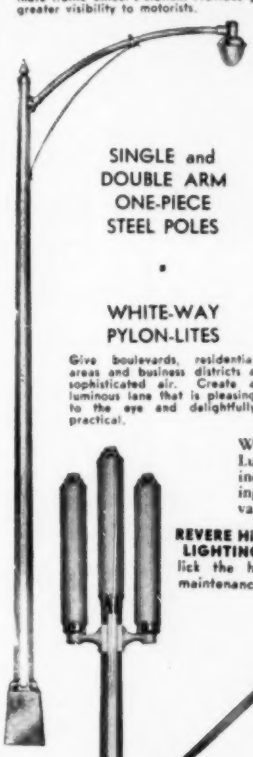
Motorola-Equipped Servi-Car

Often called the "workhorse" of police departments, the easy-to-park 3-wheeler has a turning radius of 8 feet and a 7-cubic foot body capable of a 500-pound load. Having Motorola FM radio equipment, produced by Motorola, Inc., Chicago 51, Ill., this 1952 Harley-Davidson police Servi-Car, manufactured by the Harley-Davidson Motor Co., Milwaukee 1, Wis., expedites car marking, meter checking, and traffic-control operations. The press-to-talk radio transmitter operates in the very high frequency band of 152-162 megacycles. The communications type receiver and transmitter are equipped with a special bridge balanced oven for temperature compensation of the frequency-determining crystals from minus 30 degrees Centigrades to plus 60 degrees Centigrade. Two-way radio equipment is also available in the 25 to 50 megacycle band.

This machine has a turning radius of 8 feet and a 7-cubic-foot body capable of a 500-pound load.

When Revere ELECTRIC MFG. CO. CHICAGO, ILL. STREET LIGHTING GOES UP... NIGHT ACCIDENTS GO DOWN! Invest in Safety..

REVERE No. 852—Safety Island Standard with auxiliary spotlight to illuminate traffic officer's station. Provides greater safety to pedestrians, gives greater visibility to motorists.



SINGLE and DOUBLE ARM ONE-PIECE STEEL POLES

WHITE-WAY PYLON-LITES

Give boulevards, residential areas and business districts a sophisticated air. Create a luminous lane that is pleasing to the eye and delightfully practical.

Municipal Officials Sponsor Lighting Improvements—

. . . To cut down traffic accidents.

. . . To provide more attractive shopping centers to keep business from going elsewhere.

. . . To protect public property.

. . . To provide after sun-down recreational facilities and play activities that keep the young people happy.

REVERE LIGHTING ENGINEERS are ready to help you plan the kind of a program that will make your investment pay dividends and that will be enjoyed by your citizens for generations that follow. Good Lighting is an unselfish investment.

We produce a full line of Luminaires for mercury or incandescent lamps, including finishing rings for Sylvania Sealed Beam Lamps.

We also manufacture a varied line of Airport Runway Floods, Gate Markers, etc. Write for Catalog.

REVERE Hinged Street LIGHTING POLES— lick the high cost of maintenance.

"ONE MAN SERVICE CREW" keeps lights clean and bright.

WRITE FOR LITERATURE

HINGED STREET LIGHTING POLE

Long Range Open and Enclosed Floods for Skating rinks and Playgrounds.

REVERE ELECTRIC MFG. CO.

6013 BROADWAY • CHICAGO 40, ILLINOIS

INDOOR AND OUTDOOR LIGHTING EQUIPMENT TO SERVE EVERY NEED

with GOLDAK EQUIPMENT
you KNOW you get PPD*

PIN POINT DETECTION

MODEL 620
BOX & VALVE LOCATOR

Pin Point Detection of Goldak's Model 620, saves you time and money, with immediate location of Buffalo Boxes, Valves, Covers and Buried Metals.

Untiring operation, weighs only 8 lbs. Sturdily constructed, all-weather use. High quality parts assures maximum sensitivity, low operating and nominal replacement costs.

you get PPD* with Goldak Locators

*PIN POINT DETECTION

write for **FREE** literature and name of nearest dealer

The name GOLDAK, on electronic instruments, eliminates guesswork . . . your assurance of Pin Point Detection at all times, in any kind of weather. Throughout the world, with companies who need instruments that are accurate and durable, first choice is GOLDAK.

MODEL L46
SENIOR LEAK DETECTOR

Detect costly leaks in water and low viscosity fuel lines, in their exact position. Completely portable, simple to operate. Latest electronic improvements and high quality parts, assures unequalled performance. Save time and labor, eliminate costly leakage with Goldak Model L46.

you get PPD* with Goldak Locators

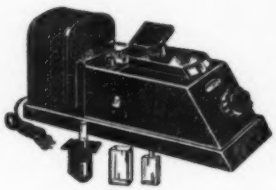
*PIN POINT DETECTION

The GOLDAK Company
Leading Makers of PIPE LOCATORS
Since 1933

1544 W. GLENOAKS BLVD.
GLENDALE 1, CALIF.

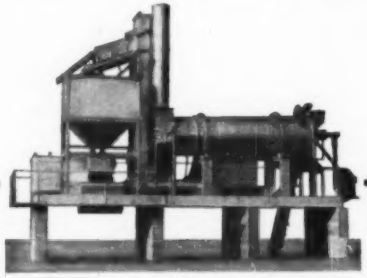
KLETT SUMMERSON
ELECTRIC PHOTOMETER

Adaptable for Use in Water Analysis



Can be used for any determination in which color or turbidity can be developed in proportion to substance to be determined.

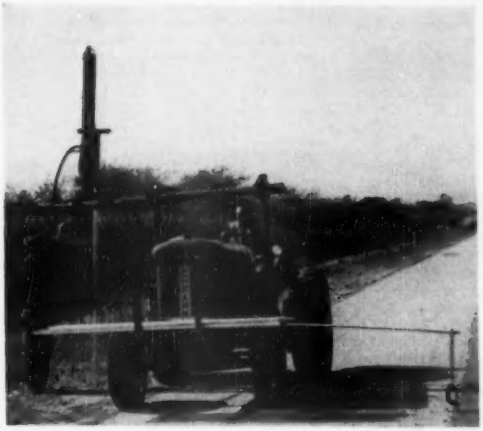
KLETT MANUFACTURING CO.
179 East 87th Street New York, N. Y.



White Asphalt Plants For Moderate Paving

Complete stationary hot plants, on 1 steel frame, easily moveable, at reasonable prices.
Excellent for medium size city paving. Successful for contractors on all street and highway maintenance; for driveways, sidewalks, industrial plants.
Supplied with oil fired rotary dryer, batch mixer, bitumen heater, vibrating screen, divided hot bin, dust collector, volumetric measure or weight scales; air controls; engine or electric power.
Sizes: L-12, 12-15 tons per hour. Will pave 25' street, 2" thick, one 300' block per day.
L-25, 25-30 tons per hour. Will cover 20' road, 1" thick, at ½-mile per day.
Also portable repair plants, 4 and 8 tons per hour.
Write for catalog and name of nearest dealer.

White Mfg. Co.
Elkhart 1 Indiana



Pneumadriver mounted on Schramm Pneumatractor drives stakes on the New Jersey Turnpike.

Machine Drives 350 Stakes A Day with Two-Man Crew

Schramm, Inc., manufacturer of portable and stationary air compressors, West Chester, Pa., reports that its new machine, the Pneumadriver is designed to drive reflector stakes, also boundary stakes, stakes for snow fences, highway markers, and many other purposes.

The Pneumadriver, mounted on the Schramm Pneumatractor, is employed to drive stakes in one-tenth the time required by the old hand method. The manufacturer states that in this particular instance, the photograph above shows one of these units in operation on the New Jersey Turnpike. Originally, the contractor had to use crews of 5 to 15 men to hand-drive the "U" stakes and the "T" stakes on their respective jobs. The original estimate of the contractor for driving the stakes by hand was 4 stakes per hour, per man. With the aid of a Schramm Pneumadriver, he was able to drive over 350 stakes a day with a two-man crew, despite the traffic interruptions and interference from other construction work that was being done on the Turnpike.

The Pneumadriver is a 7-foot air feed with a paving breaker, for mounting on a Pneumatractor. The paving breaker is fitted with a steel, shaped to fit the stakes that are to be driven.

Changes in Personnel At Chicago Bridge & Iron Are Announced

The Chicago Bridge and Iron Co., 2127 McCormick Building, Chicago 4, Ill., has appointed Marvin G. Mitchell as manager of its sales office at 57 Forsyth St., Atlanta, Ga. Mr. Mitchell will be assisted by J. W. Hoerner and B. S. Jenkins, contracting engineers.

With the concern since 1939, he worked in the drafting rooms, shop and erection department, and the sales department, being employed in Birmingham, Atlanta, and Tulsa offices.

Fred L. Goldsby has succeeded W. D. Robinson, who retired from the company's export department at 165 Broadway, New York, N. Y. In charge of the foreign erection department at New York since 1947, Mr. Goldsby joined Chicago Bridge and Iron in 1927. He has been employed in the Chicago shop, operating department, drafting room, research and development department, and served as assistant to the chief engineer.

HELLIGE TURBIDIMETER

A TURBIDIMETER WITHOUT STANDARDS

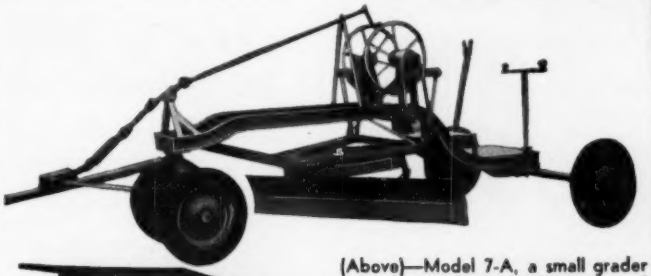
Accurate • Foolproof • Universal

Also MEASUREMENT OF TURBIDITY (SiO2) DETERMINATION OF SULFATE (SO4) AND OTHER APPLICATIONS

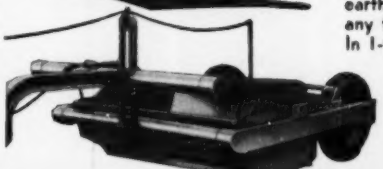
WRITE FOR CATALOG No. 8000-A

HELLIGE INCORPORATED

3718 NORTHERN BLVD. LONG ISLAND CITY 1, N.Y.



2 GREAT GLEDHILL PERFORMERS



(Above)—Model 7-A, a small grader but a big performer with many good features. Also, the Model 80, heavier, better for high banks with its longer reach.

(Left) — A compactly designed strongly built, reasonably priced earth mover that can be used with any tractor. Has hydraulic controls. In 1-yd. and 2-yd. sizes.

Send for complete specifications, folder No. 551

THE GLEDHILL ROAD MACHINERY CO.

GALION, OHIO

WILLIAMS-HAGER
flanged
Silent check
VALVES

Wherever Williams-Hager flanged Silent Check Valves are installed, plant maintenance men will tell you their costly water hammer troubles are over. These dependable, durable and compact valves can be placed in your water system in any position, including angular, and will provide maximum protection at all times. They are available for every service in standard pipe sizes from 1" to 20". Why not rid your plant of water hammer *now* . . . get Williams-Hager Check Valves.

Write today for Bulletin WH-100.

CHECK VALVES

Write for Bulletin WH 851

Write today for your copy of this informative bulletin on Water Hammer, its Cause, Effect and Control in Piping Systems.

THE WILLIAMS GAUGE CO.

3013 PENNSYLVANIA AVE. • PITTSBURGH 33, PA.

De Laval Steam Turbine Co. Forms Firm On Pacific Coast

The formation of a subsidiary corporation, the De Laval Turbine Pacific Co., at Main and Folsom Sts., San Francisco, Calif., is reported by the De Laval Steam Turbine Co., Trenton 2, N. J.

C. F. Reeves

Chairman is G. W. Smith, Jr.; president, J. P. Stewart, and vice-president and general manager, C. F. Reeves, who will be in direct charge of operations of the company, continuing the duties he has held for many years as West Coast manager of the De Laval Steam Turbine Co.

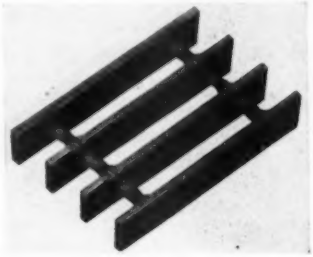
Branch sales offices are located in Los Angeles, Calif., under H. H. Reynolds, district manager, and Seattle, Wash., under J. A. Greenland, district manager. The San Francisco headquarters building includes warehouse facilities for standardized De Laval products, including centrifugal and IMO rotary pumps, speed reducers; couplings and spare parts, together with shop facilities for local handling of repair and service orders.

Besides the complete line of De Laval turbines, pumps, gears, blowers, speed reducers, couplings, and IMO rotary pumps, the new company will act as representative for Waukesha industrial engines, Kellogg - American air compressors, Diehl electric motors, and other allied industrial lines.

Steel Gratings

When looking for steel flooring, bear in mind the Weldforged grating and stair treads made by Kerrigan Iron Works, Inc., Nashville, Tenn. Available in 24-and 36-inch widths, the spiral cross bars shed water, grease and snow. The open design permits free passage of air and light, and there are no crevices in which dirt can accumulate.

A free 12-page booklet illustrates the gratings and gives safe loads and specifications.



STEEL SHORTAGES NO EXCUSE FOR ILLEGIBLE TRAFFIC SIGNS

Slip EZ-ON faces right over your old signs . . . easy to do in less than 5 minutes! This way, you salvage the entire old sign! Made of 30 gauge steel, these EZ-ON faces conserve the supply of heavier weights. Since traffic signs get top priority on our stock of this steel on hand, we can SHIP IMMEDIATELY!

3 sizes, 3 shapes READY FOR SHIPMENT! Standard copy in 18", 24" and 30" square, octagon or diamond shapes. Write for complete details.

**Patent Pending*

REFLECTORIZED SIGNS
. . . at a new low price!
Reflectorized EZ-ON sign faces cost only a fraction as much as new signs, due to our highly specialized production.

EZ-ON FACES ATTACHED IN ONLY 5 MINUTES without taking old sign out of service!

Slip EZ-ON face between post and old sign.

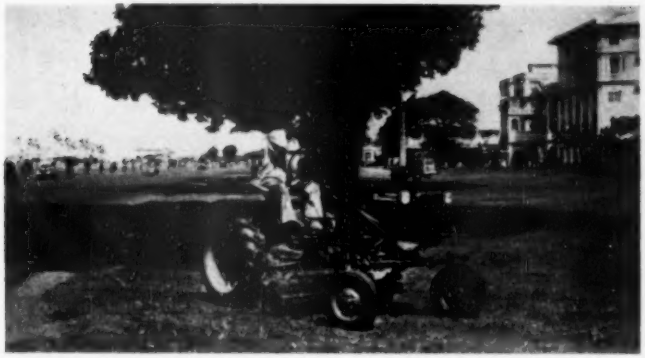
Use special crimping tool to crimp flanges.

PROVEN DURABLE!
EZ-ON faces withstood equivalent of 3 years outdoor exposure in Weatherometer tests for color retention and bead adhesion. Also tested for reflective qualities and approved by state highway departments.

WRITE
for name of nearest distributor and price list.

GRACE SIGN & MANUFACTURING CO. • ST. LOUIS 18, MO.

Manila's Dewey Boulevard Regains Pre-War Beauty



Manila's Dewey Boulevard, stripped of trees and made into a landing strip by the Japanese during World War II, is being reclaimed. Rows of coconut trees have been planted, and here's a new lawn being trimmed by a McCormick International Farmall Cub tractor equipped with a gang mower made by the Coldwell-Philadelphia Lawn Mower Co., Inc., Newburgh, N. Y.

Named Regional Manager For Youngstown Kitchens

Joseph G. McNicol has been appointed regional manager for Youngstown Kitchens, with headquarters in Portland, Ore., it was announced by D. F. Rucks, Jr., sales manager of Youngstown Kitchens, which are made by the Mullins Mfg. Corp., Warren, Ohio.

With the firm since 1937, Mr. McNicol became assistant service manager in 1947. In his new position he will have charge of sales to wholesale distributors in Portland, Seattle, and Spokane.

PAINT TRAFFIC LINES FASTER

FOR STREET & HIGHWAYS

Mark-Rite Econo-Liner is widely used by cities & municipalities.

FOR PARKING AREAS

Mark-Rite Gravity Marker paints lines 2", 3" or 4" wide. 1½ gal. tank.

Mark guide lines quickly and clearly on streets, highways, parking and recreational areas. Econo-Liner is compact, durable, easy to operate and maintain. Adjustable shields produce sharp lines in any width from 2" to 6". Puts down approximately 10,000 to 15,000 ft. of line per hour. Has a 5 gal. cap. tank. Free-floating paint shields follow the contours on brick, black top, concrete or any other surface. Econo-Liner is easily converted into a portable spray rig. Dealers everywhere.

Write for this folder.

UNIVERSAL MFG. & SALES CO. • 8716 Santa Fe Ave., South Gate, Calif.

Mark-Rite LINE MARKERS

COPROX

the NEW copperized hard cement coating

LIFE *told about it in the July 16th issue*

PROTECTS MASONRY AGAINST WATER SEEPAGE, DAMPNESS AND EROSION

HAS THESE ADVANTAGES OVER OTHER PROTECTIVE MASONRY COATINGS

1. **BOND OF MONOLITHIC NATURE.**
2. **INCREASED DENSITY** because of greatly reduced pore structure and size.
3. **RESISTANCE TO HYDROSTATIC PRESSURE*** but permits release of vapor pressure through "breathing."
4. **TOUGH, HARD, WASHABLE SURFACE.** No dusting.
5. **CONTRACTION AND EXPANSION MINIMIZED** with little or no cracking or checking.
6. **FAST COLORS** . . . no fading.

*Laboratory tests show that two coats of COPROX on one side of a 1" thick panel of concrete prevented the passage of any moisture while a water pressure equal to a 60' head (26PSI) was exerted against it. A similar but uncoated control panel allowed passage of 220 gallons of water per hour.

MUNICIPAL—STATE—FEDERAL ENGINEERS WHO HAVE TESTED COPROX *ARE NOW SPECIFYING IT*

GET MORE INFORMATION ABOUT COPROX TODAY

AC-2

COPROX, INC.
1270 Avenue of Americas, New York 20, N. Y.

Tell me more COPROX facts for engineers.

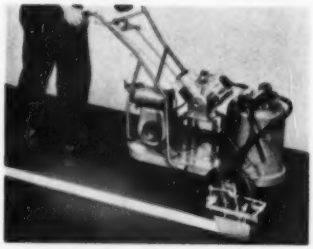
NAME.....

STREET ADDRESS.....

CITY.....ZONE.....STATE.....

Flexible Paint Guide Permits Machine to Follow Contour of Surface

The Universal Manufacturing and Sales Co., 8716 Santa Fe Ave., South Gate, Calif., announces a new flexible paint guide which enables the Econo-Liner line marker to paint sharp, clear lines on rough surfaces. The manufacturer states that this guide permits the machine to follow the contour of the surface when painting on concrete, wood block, black top, or brick. It is adaptable for use by municipalities and military bases for marking danger zones, traffic lanes, cross walks, parking stalls, and storage sections.



Any width line from 2 to 6 inches is painted by this machine.

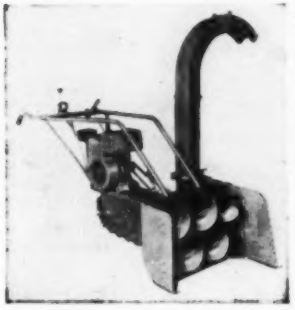
The Mark-Rite Econo-Liner will put down approximately 10,000 feet of line per hour. With the adjustable spring-loaded shields, it will paint any width line from 2 to 6 inches, and marks as close as ⅛ inch alongside fixed objects. The machine is powered by a 2-hp 4-cycle engine. The compressor is diaphragm type, twin cylinder, providing 4 cubic feet of air per minute, and the paint container has a 5-gallon capacity which can be removed for cleaning. Equipped with a quick-release handle to permit rapid reloading, the machine can be converted into a spray rig to handle spray painting, stencil spraying, and other spray maintenance jobs.

Rotary Snow Plow

The Trio Snow Jet is a 30-inch double rotary snow plow with a "never-stop" rugged 7½-inch track and 7.7-hp engine. The Dahlman Equipment Sales Co., 500-502 N. Prior Ave., St. Paul 4, Minn., reports that the machine will move forward through any snow at the desired throttle speed under its own power, cutting a 30-inch swath with no effort for the operator, who simply guides it. Two specially designed 9-inch parallel augers bite into the drifts with ease. To scoop up the snow and direct it into the rotating augers, there is a high-carbon steel grader blade across the front.

The six-foot blower spout is easily swiveled to blow the snow in any desired direction. A rotary fan receives the snow from the augers and blows it a great distance from the area which is being cleaned. The hand clutch with live power and throttle are conveniently placed for fast, smooth operation. A B-section V-type belt is employed from the plow to the sturdy, endless track to eliminate breakage when hitting a tree, a large stone, or damaging obstacles.

Among the places where the equipment can be employed are driveways, airports, manufacturing plants, parks, schools, and hospitals.



A 30-inch double rotary snow plow with "never-stop" rugged 7½-inch track.

How CLEANLINESS IS AUTOMATIC WITH Bennett Bilt WASTE RECEPTACLES

Everybody is a member of your cleaning department by conveniently locating Bennett Bilt Self-Closing Receptacles to invite their use for economical neatness and sanitation. *Put them to work for you today.*

ONLY BENNETT BUILT WASTE RECEPTACLES HAVE ALL THESE FEATURES:

- Stainless steel feet
- Extra heavy-gage, corrosion-resistant steel
- All-welded construction
- Smooth surface—no catching or tearing of clothes
- Reinforced rounded corners for strength and appearance.
- Counter-balanced self-closing, independent doors stay closed to provide greater sanitation and reduce fire hazards
- Baked white or green enamel finish

Built for hard usage make these receptacles a natural "buy". Write for fully illustrated catalog.

Below shows how easy it is to remove Osnaberg bags or galvanized liners.

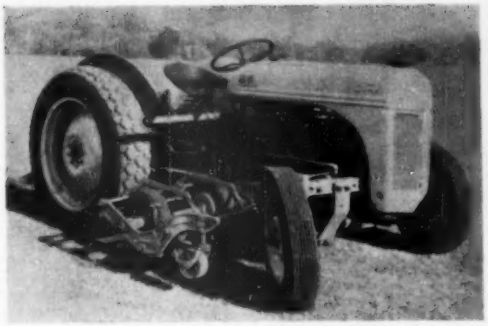
ALSO PRODUCERS OF PAPER TOWEL AND TISSUE PAPER DISPENSERS

Single fold junior paper towel dispensers.

No. 500 and No. 600 tissue paper dispensers for single fold and double fold respectively.

Double fold paper towel dispensers.

BENNETT MANUFACTURING CO., ALDEN, N.Y.



Mower assures controlled uniformity of cut without raising or lifting of unit.

Cutting Speed Feature Of Heavy-Duty Mower

A new heavy-duty rear-wheel drive mower has been added to the line of lift-type mowers of the Roseman Mower Corp., Evanston, Ill. Known as the Special Purpose Challenger model, the equipment has rear, rubber-drive wheels and mows large expanses of lawns two to four times faster than conventional methods, reports the manufacturer.

The rear wheels are so designed that the cutting units will hug the ground at all times, assuring controlled uniformity of cut without raising or lifting of the mower. Because there are no side wheels, the over-all width is narrower and permits closer mowing around trees and shrubs.

Other features include: maneuverability and facility in transportation from one area to another; rubber-drive wheels which offer a cushion effect to eliminate shock to the mowers; unusual power of rear-wheel design which drives reel blades over the toughest grasses without difficulty; an attachment for mowing high grass, and a new hand reel adjustment to permit quick and easy adjustment of the bed knife without hand tools.

CUT COSTS with LINDSAY MODEL 33 COMPRESSOR

Water Departments, Municipalities and Contractors choose this powerful low cost compressor for opening service trenches and other jobs for which light paving breakers and rock drills are used. Write for detailed information. Dealerships are available in some areas.

P. K. LINDSAY COMPANY

97C Tileston St. Everett 49, Mass.

The

SEWER SCOOTER*

* Trademark

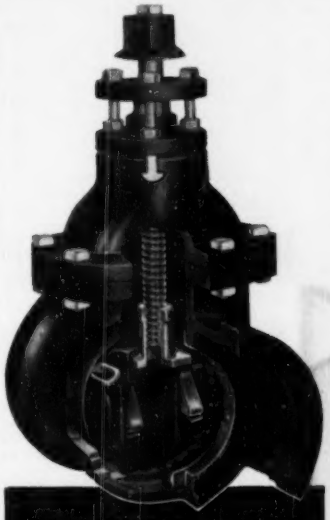
Sewers Clean Themselves With a Sewer Scooter

100% self-propelled for 6" to 96" sewers—Is equally effective for all conditions and problems of sewer maintenance—completely cleans sewers of all sediments: rocks, gravel, sand and "hard-to-move" sludge. Quick and efficient in operation. Investigate today! Ask for Bulletin.

Dealers—Some good territory open

Fitzgerald Engineering Co., Inc. P. O. Box 289-G, Coral Gables 34, Fla.

IOWA valves



Simple . . . rugged construction

MEET ENGINEERS RIGID 3 POINT SPECIFICATIONS

1 Solid bronze Wedges are placed loosely in two iron hooks which permit the wedging surfaces of the wedges to be at different angles with the wedges cast on the valve discs. *Solid bronze stem nut* is loose and independent of the gates and wedges, thus preventing binding or springing of the spindle or freezing of the gates.

2 All Working Parts are bronze or *bronze mounted* to safeguard against corrosion as well as to permit free and positive operation both in wedging the gates into contact with the seats and in releasing them.

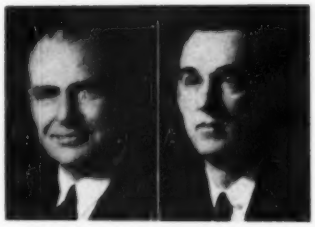
3 Iowa Valves exceed A.W.W.A specifications and meet engineers choice for a quality product.

IOWA VALVE COMPANY

Dorr Co. Executives

J. Delano Hitch, formerly vice-president in charge of sales of The Dorr Co., Stamford, Conn., has been promoted to executive vice-president. He is succeeded by T. Bartow Ford, until recently manager of international sales, who also has been elected a company director. John H. E. Fedeler, an international sales assistant manager, has succeeded Mr. Ford.

With Dorr since 1927, Mr. Hitch was Far Eastern representative with headquarters in Tokyo from 1929 to 1937. He returned to New York in 1937, becoming export sales manager, and in



J. D. Hitch T. B. Ford

1945 was technical adviser to the Office of Strategic Services in China. Mr. Hitch was elected a director of the company and vice-president in charge of sales in 1946.

Mr. Ford has served with the organization as a junior engineer, office manager, succeeded Mr. Hitch in Japan in 1937, in 1941 was industrial division assistant manager in Chicago, and in 1946 was manager of international sales.

Mr. Fedeler had 10 years of filtration experience before joining the company.

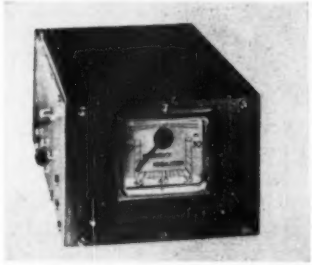
Sales Dept. Changes At Fairbanks-Morse

Announcement has been made by Robert H. Morse, Jr., president of Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago 5, Ill., of changes in the company's sales organization.

J. A. Cuneo, formerly Chicago branch manager, has been promoted to general sales manager; H. L. Hilleary will continue as assistant sales manager, and C. E. Dietle, former Diesel Department manager of the Chicago branch, has been promoted to manager of the Diesel Sales Division.

O. O. Lewis is vice-president in charge of sales for the company.

Low-Cost Radio Receivers For Municipal Vehicles

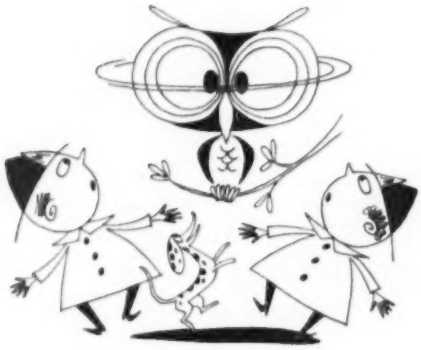


Five low-cost receivers are available for the principal frequency bands used in municipal emergency radios. Two are 6-volt battery-operated units for receiving FM 2-way radio communications in the 30-50 mc and 152-163 mc bands. They give 100-kc selectivity drift compensated, with 10 microvolt sensitivity. A squelch adapter is available which may easily be applied to either of these models to render the set quiet under no-signal conditions, if necessary.

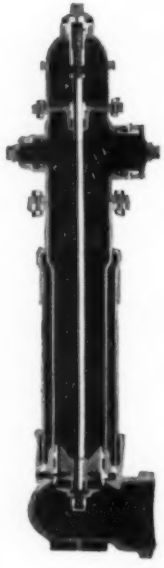
For covering aircraft communications within the 108-149 mc band, there is an amplitude-modulated unit having numerous uses, even to informing the wives of fliers of their husbands' arrivals or delays.

These municipal receivers are operating from Alhambra, Calif., to Boston. City Manager S. L. Grant of Winchester, Va., speaks of applicability to public works vehicles, as they are also to police, fire, civil defense, and transportation vehicles. For data sheets on each receiver, write the Radio Apparatus Corp., 55 N. New Jersey St., Indianapolis, Ind.

Head turns all the way around



Nozzle direction may be changed easily and at any time by simply loosening the bolts in the swivel flange and turning the head . . . The number and size of nozzle outlets can be changed by replacing the head, and without shutting off the water.



MATHEWS

HYDRANTS

Made by R. D. Wood Company Public Ledger Building, Independence Square, Philadelphia 5, Pa. • Manufacturers of "Sand-Spun" Pipe (centrifugally cast in sand molds) and R. D. Wood Gate Valves

Mathews Modernized Hydrants . . . Tops in Convenience and Dependability Compression-type valve prevents flooding • Head turns 360° • Replaceable head • Nozzle sections easily changed • Nozzle sections raised or lowered without excavating • Protection case of "Sand-Spun" cast iron for strength, toughness, elasticity • Operating thread only part to be lubricated • All working parts contained in barrel • A modern barrel makes an old Mathews good as new • Available with mechanical joint pipe connections

Portable photo-copier which can be plugged into an ordinary a.c. or d.c. 110-120 volt electric outlet.

Portable Photo-Copier Fits In Briefcase

The Contoura is a portable photo-copier that copies everything everywhere and fits in your briefcase, reports the manufacturer, F. G. Ludwig Associates, 71 Pease Road, Woodbridge, Conn.

The Research Model, which copies any size material up to 8 by 10 inches, is 10½ inches long by 8½ inches wide, 2¼ inches deep, and weighs slightly over 4 pounds. The Legal Model, which is 14½ inches long by 9½ inches wide and 2¼ inches deep, weighs less than 7 pounds, and copies material up to 8½ inches by 14 inches.

The machine's plastic cushion makes it possible to copy book pages even of tightly bound volumes and insures perfect contact when copying flat documents.

Contoura can be plugged into an ordinary a.c. or d.c. 110-120 volt electric outlet. It operates in a lighted room, makes permanent copies, and developing is simple, since all that is needed are standard, easy-to-use chemicals, water, and a couple of trays.

Asphalt Institute's Engineer at Denver

Bernard E. Gray, president of The Asphalt Institute, 801 Second Ave., New York 17, N. Y., announces the appointment of Jewell R. Benson as special projects engineer to promote the use of asphalt for the U. S. reclamation program and other special purposes.

With office at 1250 Stout St., Denver, Colo., Mr. Benson will be engaged on a national scale in directing and coordinating the institute's studies with field engineering activities relating to canal, reservoir, and pond linings, dam facings, erosion control, and all other special asphalt uses.

For the past five years, he has been with the U. S. Bureau of Reclamation at Denver as bituminous engineer and head of the Bituminous Laboratory.

At the Denver office of the institute, Mr. Benson will cooperate in matters relating to reclamation, allied, and other special asphalt-use activities. J. R. Banning, also at the Denver office, will continue to provide divisional facilities relating to the promotion of asphalt, particularly for road, street, and airfield development.

Now all Philadelphia firemen get 2-way radio coverage from either the main station or the new auxiliary station.

Does your city need this protection?

New auxiliary station operates four 250-watt transmitters, two channels for police, two for fire.

Two easy-to-operate consoles route calls to fire and police apparatus all over Philadelphia.

New Philadelphia 2-way radio center controls police, fire, civil defense. Provides radio coverage for any emergency.

New station remote from downtown area

Philadelphia is a *safer* city now, thanks to a new RCA 2-way radio center recently established in West Philadelphia, four miles from the heart of the city. Acting as an auxiliary to the main control center at City Hall, this new installation will provide *emergency* 2-way communications with mobile police and fire units. It will also serve as control center for civil defense.

Two-station coverage gives double protection

Both the main station and this new auxiliary station operate on the same frequency. If one fails, the other takes over. So Philadelphia is assured of *extra* safety in emergencies. It's all typical of RCA 2-way radio at work . . . making things safer and more efficient wherever it's used.

Is your city protected by 2-way radio?

Radio coverage of police, fire, and emergency vehicles is almost mandatory in these troubled times. And even in day-to-day operations, it can quickly save your taxpayers far more than it costs.

RCA Engineering Products
Dept. 4B
Camden, N. J.

Please send me your big, new, free, illustrated booklet, "RCA 2-way Radio for Public Safety."

Name_____

Position_____

Address_____

City_____ State_____

RCA radio easy to install-operate-maintain

Look into RCA radio for 2-way coverage in *your* city. Mobile units are compact, lightweight . . . easy to install and maintain. Performance exceeds FCC requirements. Designed and backed by RCA, world leader in radio. Nation-wide service available through RCA Service Company.

Get full story for your city—now

RCA **RADIO CORPORATION of AMERICA**

Cleco Distributors In Pa., Conn., Iowa

The Cleco Division of the Reed Roller Bit Co., Houston 1, Texas, has announced the appointment of the George W. Cassady Co., Sylvan Dell Road, Williamsport, Pa.; Davenport Engrg. Co., 415 W. Third St., Davenport, Iowa, and Monogram Air & Power Equipment Co., Inc., 125 Olive St., New Haven, Conn., as distributors for Cleco products in their areas.

The company manufactures the Cleco and Dallett lines of air tools and accessories, including tools for construction, manufacturing, metal fabrication, foundries, industrial maintenance, and stone carving. For information about the equipment, write to the manufacturer.

Trolley Coaches

A 132% increase in the use of trolley coaches in the past decade was revealed during the winter general meeting of the American Institute of Electrical Engineers. G. M. Woods and C. R. Steen of the Westinghouse Electric Corp., Pittsburgh 30, Pa., described a new series type motor for trolley coaches and reported that this type of conveyance "has become established as one of the most important vehicles in city transit," with 6,504 in use at the end of 1950, compared to 2,802 in 1940.

General Sales Manager For Seaman Motors, Inc.

A. C. Cartwright has been appointed general sales manager of Seaman Motors, Inc., 202 N. 25th St., Milwaukee 3, Wis., manufacturer of the Seaman mixer.

A. C. Cartwright

For 23 years, Mr. Cartwright has been engaged in the manufacturing, sales, and distribution phases of the heavy machinery and construction equipment industries. Before joining Seaman Motors, Inc., he was central eastern division sales manager for the Trackson Co., of Milwaukee, having his office at Columbus, Ohio.

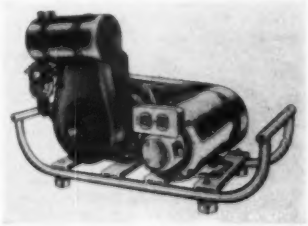
Electric Generators In Three Ratings

The Wincharger Corp., 2110 E. 7th St., Sioux City 2, Iowa, announces the development of new portable gas-engine driven electric generators, Model 1800, in three general ratings—1,000, 1,250, and 1,350 watts at 115 volts, 60 cycles, a.c. They are suitable for many power requirements, such as emergency repair trucks, portable power tools, floodlights, and police radio systems.

These generators are equipped with sealed ball bearings. The manufacturer states that the belted construction cushions shock to the generator, reduces vibration, and increases the generator life. The generator is mounted alongside the engine, locating it out of the path of the hot air from the engine cooling system, thus promoting cooler generator operation.

According to the company, the unit is equipped with a universal mounting base which permits mounting any one of several popular makes of engines. The generating unit may be purchased completely equipped with engine or may be purchased without an engine. Also available is the generator alone without the engine mounting base.

Free literature may be obtained from the manufacturer on request.



Portable gas-engine driven electric generator, suitable for many power requirements.

"Come on to my house... it's next to WARREN Cast Iron Pipe!"

Specify

WARREN CAST IRON PIPE...

... in all sizes from 2" to 84" with all types of joints ... and WARREN special Castings to meet your requirements for non-standard patterns.

Warren FOUNDRY & PIPE CORP.
55 LIBERTY STREET, NEW YORK 5, N. Y.

Bell & Spigot Pipe • Flange Pipe • Mechanical Joint Pipe
Flexible Joint Pipe • Short Body Bell & Spigot Specials

WARREN PIPE CO. OF MASS. INC. 75 FEDERAL ST. BOSTON, MASS.

95 Years of Continuous Service

"Since 1885"

GRUENDLER the choice again in 1951

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Gainesville, Fla.
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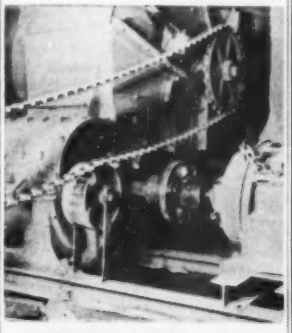
Harlingen, Texas
Dallas, Texas
Portland, Ore.
Yonkers, N. Y.
Staunton, Va.
Burlington, Vt.
Cheyenne, Wyo.



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Disintegrates the waste for continuous flow

Bulletin S. G. 10 mailed on request

GRUENDLER CRUSHER and PULVERIZER CO.

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St. Louis 6, Mo.

Instrument Recovers Small Metal Objects

New single loop metal detector

Lost or hidden metal objects, such as pavement covered manhole covers and valves, property corner markers and survey pins and tools, can now be located with a new single loop metal detector developed by the Fisher Research Laboratory, Inc., Palo Alto, Calif.

The unit can be employed for locating metal objects beneath soil, rock, cement, asphalt, wood, brick, and fresh or salt water, as well as for detecting metal objects behind brick, plaster, or adobe walls. The manufacturer states that metal objects are easily identified by a distinctive earphone tone as well as a visual meter indication.

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can carriers

No. 16-S

"Street Sweeper's Friend"

Single-piece welded frame. Choice of tiring: pneumatic, solid rubber, plain steel. Roller bearings. Full swiveling caster wheels. Silent can clamp. Safety warning flag. Balanced and light running.

TARCO welded carriers are STRONG.

TARRANT MFG. CO.

East Ave., Saratoga Springs, N. Y.

BARCO *Gasoline* **HAMMER**

- ONE MAN OPERATION
- NO AUXILIARY EQUIPMENT NEEDED

NOW!

BETTER THAN EVER!

Here is the new, improved Barco Gasoline Hammer! Simplified ignition and refinements in design make it better than ever for all kinds of heavy duty jobs: Pavement Breaking...Cutting...Digging ...Frost Breaking...Rod Driving.

PAYS FOR ITSELF!

Proved in the municipal field—a profitable tool! Low first cost, low operating cost, low maintenance expense. Portable—take it any place. No compressor needed. Simple, easy to operate.

ASK FOR DEMONSTRATION

See for yourself—ask for our nearest distributor to give you a demonstration.

- Send for CATALOG No. 612

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For the BEST in
INSULATED PIPING

Specify **RIC • WIL**

If your design problem involves insulated piping, your most efficient answer is Ric-wil Prefabricated Insulated Piping.

Architects, engineers, and contractors have long recognized Ric-wil engineering and high-efficiency operating performance—factors that make Ric-wil "the Greatest Name in Insulated Piping".

Ric-wil PREFABRICATED INSULATED PIPING — UNDERGROUND OR OVERHEAD

THE RIC-WIL COMPANY · CLEVELAND, O.

NEW TYPE EASTERN "A" STANDARD

The most effective warning sign for work areas. Wide base red angle-iron frame won't blow over. Yellow free-swinging sign, black lettering on both sides. Choice of eight standard legends, also reflectorized.

Portable unit stands 27-in. high by 18½-in. wide; folds and locks 18-in. x 18-in. sign in place; flags removable; weighs only 13 lbs.

STOP

NO PARKING THIS SIDE

SPEED LIMIT 35

All Eastern Metal traffic signs are official designs as specified by the Department of Commerce, Bureau of Roads—new legible lettering, heavy-gauge steel and durable flexible baked enamel. Prompt delivery and economical price.

Send for illustrated folder and price list.

INDUSTRIAL • SAFETY • UTILITY • TRAFFIC
EM SIGNS

EASTERN METAL of Elmira, Inc., Elmira Heights 1, N. Y.

CHEAPER THAN LAWSUITS!

FAIRBANKS-MORSE GENERATING SETS

Power failure can start a lot of trouble for theater operators, hospitals, institutions, churches, schools, police, fire and other municipal departments. Injuries, loss of life, and property damage can lead to lawsuits and heavy damage claims.

Protect yourself. Install a Fairbanks-Morse Generating Set for quick power during emergencies. Available in a capacity to meet your needs. For details, see your local Fairbanks-Morse dealer, or mail coupon.

Fairbanks, Morse & Co.
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We are interested in emergency power generating sets. Send details.

Name .....
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a name worth remembering

AEROIL HEET-MASTER 230, 330 AND 500 GAL. KETTLES FOR ROAD REPAIR BUILDING. SAVE 50% ON FUEL AND TIME

The famous HEET-MASTER Kettle, that does the work of two bottom fired kettles, is available in the larger size for big repair and paving jobs. (Ask for Bulletin No. 400RN.) Other Free Bulletins you'll want to have on file: Nos. 171, Asphalt Surface Heaters & Paving Tool Heaters; 502, Aeroil 400 to 600 gal. Utility Trailer Sprayers; 397Y, All-Steel Tool Boxes; 637, Cut Back & Emulsion Sprayers; 174, Burners & Torches. All AEROIL Products are guaranteed for a full year against defects in workmanship and materials. Experience of over 33 years assures you of the finest and most economical equipment.

AEROIL PRODUCTS COMPANY, INC.
5 Wesley St. South Hackensack, N. J.

Service with a Smile

For information on any type of municipal equipment, Write . . .

THE AMERICAN CITY, 470 Fourth Ave., N. Y. 16

A Mobile Communications Guide for Civil Defense

A Guide to Mobile Communications for Civil Defense has been prepared by The Leece-Neville Co., Cleveland 14, Ohio. The publication cites the advantage of the use of two-way radio for police and fire departments, hospitals, and other groups which must contact local civil defense communications centers. It also lists those who employ its method and quotes comments by its users.

The manufacturer's mobile two-way radio is a self-contained, self-powered completely independent means of communication and gives the civil defense director complete control of the services at his command.

The Leece-Neville alternator system produces dependable power, reports the company. It consists of the alternator, which produces alternating current; a rectifier, which changes the a.c. to direct current, and a regulator, which accurately controls the voltage. This system produces at 25 to 35 amperes with engine idling. The manufacturer states that any defense service vehicle equipped with the Alternator System and two-way radio can be parked with engine idling and radio operating, without danger of running down the battery.

For a copy of the booklet, write the manufacturer.

New Insecticide Approved For Armed Forces

The United States Quartermaster Corps, Research and Development Division, has specified the new insecticide, Lindane, for control of various insects infesting military personnel and their quarters both domestically and overseas. Specifically, the Army and Navy will use Lindane dusting powder to control body, crab, and head lice, fleas, bedbugs, and other crawling insects on military personnel and in quarters. The Armed Forces in Japan and Korea in December received close to a million pounds of Insecticide Powder Dusting Lindane, which were shipped by the California Spray-Chemical Corp., Richmond 4, Calif.

The Quartermaster Corps will provide Insecticide Powder Dusting Lindane containing 1% Lindane for skin dusting; for dusting surfaces of Armed Forces' uniforms and underwear, blankets, and the soil or floor immediately surrounding bedding, and for treating buildings and other insect-infested areas.

According to the manufacturer, this insecticide kills 207 different species of insects and has a three-way action: it kills by contact, stomach poisoning, and by vapor action. Lindane residues of minute crystals give off vapors which continue to kill insects for several days after the original application.

The California Spray-Chemical Corp. reports that the approval of Lindane has coincided with dispatches from Armed Forces scientists connected with the Korean campaign who reported that DDT, once considered one of medicine's greatest military weapons for control of lice transmitting typhus fever "now appears to be of uncertain value." Korean strains of body lice which are potential carriers of typhus are highly resistant to DDT. Therefore, military scientists are counting on Lindane to solve the problem since it has continually outperformed DDT in the control of many pests.

Air Curtain Guide Plates

For Perfect Traffic Lines:

AIR CURTAINS, basic feature of all Kelly-Creswell Equipment, make possible the application of clean-cut, attractive lines without coming in contact with the surface.

Special striping guns by DeVilbiss, air actuated traction and pressure-cleaning equipment also feature K-C equipment. These are the reasons why more Highway-Zone-marking material is applied through K-C equipment than through any other make.

TRUCK-MOUNTED AND PORTABLE EQUIPMENT AVAILABLE.

There is a Kelly-Creswell Model that will solve your zone-marking problems.

KELLY-CRESWELL CO., Xenia, Ohio

American Vacuum Leaf Loader

Solves your leaf or clean-up problem

Write for leaflet

LEAF LOADER DIVISION

American Structural Steel and Tank Co.

21050 W. 8 MILE ROAD DETROIT 19, MICH.

In the smart center of New York!

A few steps from the Fifth Avenue entrance to Central Park, it is conveniently close to the city's outstanding points of interest. Radio City, Carnegie Hall, Theatres, and Art Galleries are but a short walk. Shopping on Fifth Avenue starts just around the corner from HOTEL FOURTEEN. All accommodations have private baths, complete hotel service.

VINCENT J. DOLZEN
Gen. Mgr.
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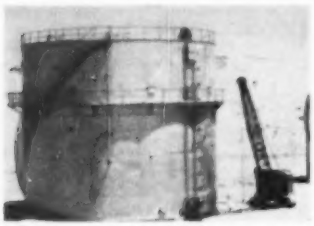
"Home of the Celebrated Burgundy Room."

HOTEL FOURTEEN

14 EAST 60TH STREET

NEW YORK 22

Low-Cost, Trouble-Free Sewage-Gas Storage



Municipalities apparently are taking a leaf out of the notebook of good practice used by industry when erecting storage facilities for sewage digester gas. In the new Owls Head sewage-treatment plant built by New York City, and the Hyperion plant erected by Los Angeles, digester gas is being stored in cylindrical, Wiggins gas holders built by the General American Transportation Corp., 135 S. LaSalle St., Chicago, Ill.

These Wiggins gas holders are of the same type used by industry when storing oxygen, carbon dioxide, carbon monoxide, hydrogen, and gas sold commercially to homes and industries. The manufacturer states that it can be used to store all except a few highly reactive gases.

The holder uses a piston-type floating cover that does not require the usual liquid seal. This avoids the danger of leakage and the difficulty of freezing in extremely cold weather. One carbon-dioxide holder is being used successfully in Canada.

The seal between the cover and the wall of the tank consists of a woven asbestos fabric coated on each side with synthetic rubber. This seal has been tested to show a dependable active life for at least 15 years. The use of such a seal makes it possible to build a tank on a much less costly foundation.

The Wiggins floating cover can be applied to most existing steel cylindrical tanks, the manufacturer states. The holders can be built to any size from 50 to 10,000,000 cubic feet. The company's Bulletin WG-12 describes the holder in detail.

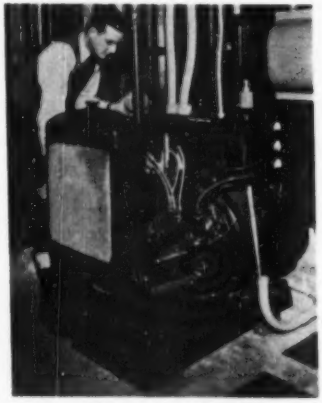
Insecticide Sprayers, Fire Extinguishers

Insecticide sprayers made by The Lofstrand Co., Rockville, Md., are corrosion-resistant, will not clog, have ready-grip pumps, and have a pressure gauge registering up to 60 pounds' pressure. The new, 1-gallon, heavy-duty sprayer is for small indoor and outdoor jobs.

Other models include the 250-A, heavy-duty, 3-gallon machine with lever-type self-lock gun, or with squeeze-type self-lock gun and CO^2 bottle for continuous spraying. Model 250A-2G is a heavy-duty stainless steel tank sprayer available in the 2-gallon size.

The company also produces an improved 3-gallon water dispersible DDT sprayer with oversize strainer, air-valve attachment, quick-acting exhaust valve, and constructed of heavy-duty stainless steel.

Another product is a double-action pump-type fire extinguisher, which is compact, easy to carry, and simple to operate. It throws a steady stream up to 35 feet, has electrically welded seams, an interior which is heavily coated with asphaltic paint to prevent corrosion, and a reinforced tank. The extinguisher is for use on Class A fires, including wood, trash, textiles, paper, and is effective in office buildings, homes, schools, warehouses, and apartments.



Here is a Kohler electric plant in one of the 31 transmitter stations of the New York State Police. These stations dot the entire state, but many of them are of necessity located in remote places which can be reached only by steep wilderness roads. All the stations are hooked up with troop headquarters and division headquarters in the capitol at Albany.

Be Safe From Storms By Using Standby Electric Power

Just about a year ago the Eastern Seaboard was lashed by storms of tremendous ferocity. Terse headlines in New York newspapers proclaimed the disaster: "Gales and Rain Ravage City," "Power Fails in 407,000 Buildings," "100 Mile Wind Batters City."

The storm dealt a crippling blow to the city's utilities, disrupting their service for long periods of time. The hardest blow was delivered to the sources of central electric power, most vulnerable since a portion of electric power is transmitted above the ground by means of utility poles. It was days before utilities crews, working around the clock, could restore complete service to metropolitan New York City.

Other cities throughout the nation also experienced the havoc of storms—lost business, disrupted communications, and plain human discomfort.

The Kohler Co., 44 High St., Kohler, Wis., stresses the importance of municipalities having standby electric power for such emergencies. The company manufactures electric plant models which are designed to start automatically when power fails, adjust themselves to load changes while they are running, and then shut off when central power is restored.

According to the manufacturer, such standby electric power as it produces can easily pay for itself, not only in the peace of mind it allows by providing a continual, uninterrupted source of electric power, but in maintaining normal business operation during electrical blackouts. The company's equipment is in operation in theaters, hospitals, police departments, aboard Navy ships, and wherever standby electric power is an absolute necessity. Write for descriptive literature.

Hurricanes, tornadoes, and other freaks of nature can be just as destructive as sleet and snow, as evidenced by this scene in Miami, Fla. Communities and businesses that prepare for such catastrophes by installing emergency power usually right themselves and repair the damage in short order.

The American City Professional Service Directory

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Stereograms, relief models, large-scale atlas sheets.
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Appraisals of Municipal Properties: Schools, Utilities, Hospitals, City and County Administrative Buildings For Insurance and Accounting Purposes

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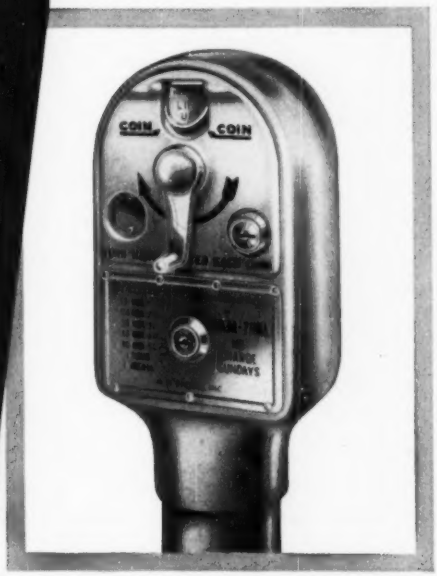

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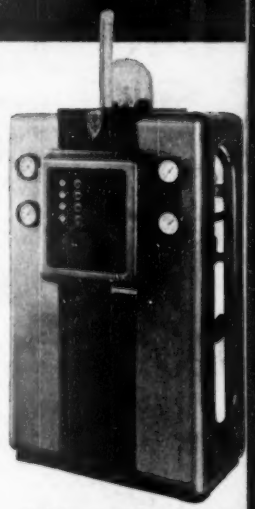

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